

SANTA CLARA



RIVER RESERVE



SANTA CLARA RIVER RESERVE

**Recreation
and
Open Space**

**Management
Plan**

NOVEMBER 2005

Santa Clara River Reserve Recreation and Open Space Management Plan

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Special thanks to the following individuals and groups who contributed greatly to the dream and vision of the Santa Clara River Reserve.

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This Recreation and Open Space Master Plan (Master Plan) for the Santa Clara River Reserve was created as part of a partnership project involving Ivins City, Utah (Ivins), Santa Clara City, Utah (Santa Clara), and the St. George Field Office of the Bureau of Land Management (BLM). The visions and recommendations contained in this document represent input from many constituencies: concerned citizens, adjacent landowners, municipal organizations and professional designers and planners. The project embraces the principle of community-based planning, bringing together all elements of the community to resolve problems and achieve common goals.



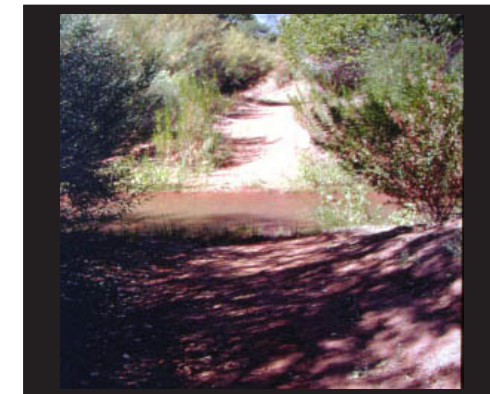
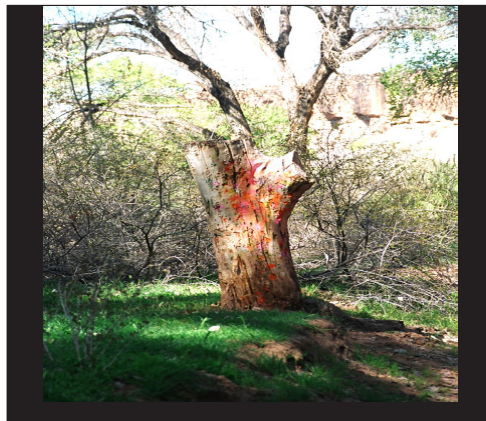
As leisure-rich Americans turn increasingly from the teeter-totter and turnpike to trail, and as large, natural open spaces become more and more difficult to acquire, comprehensive inventories of useable rights-of-way must be made available to state, county and local governments; and governments must seize these opportunities before they are lost forever. It is no longer enough to remember that trails nurtured the growth of this nation. What is clearly needed now is a national effort to nurture the growth of trails. (Constance Stallings, rights-of-way, open space action, 1968)

Introduction

Location and Setting

The Santa Clara River Reserve (SCRR) Recreation and Open Space Planning area is located in the west central portion of Washington County, Utah, and consists of approximately 9,000 acres of public domain lands managed by the BLM, including the 6,500 acre SCRR and approximately 1,000 acres of other adjacent public domain lands. The lands are adjacent to the municipal boundaries of the incorporated communities of Santa Clara and Ivins. The Project Planning area borders Ivins on the north, Santa Clara on the east; extends south to Boomer Hill and BLM's designated Red Bluff Area of Critical Environmental Concern (ACEC); then west to the Beaver Dam Mountains; and west and north to the Shivwits Reservation. It also includes Land Hill, portions of the South Hills, and the White Hills.

The SCRR boundaries were established through a Cooperative Management Agreement signed between BLM and the City Councils of the two communities in 1997, and amended in 2003. The boundaries were selected based on community priorities to protect sensitive resources at risk, preserve open space, and enhance recreation opportunities. The SCRR offers spectacular views of an arid, untouched landscape and contains a lush riparian zone along the Santa Clara River where visitors enjoy shade and cooler temperatures, even in summer. Other valleys and washes in the SCRR support wondrous desert microclimates. Cove Wash, a deep narrow canyon that begins on the eastern border of the SCRR, serves as a connection route for foot traffic to outlying areas of the SCRR.



Purpose and Need for the SCRR

During the last decade, the population of Washington County has more than doubled. Media exposure of Southern Utah's unique landforms, cultural heritage, and agreeable climate has dramatically increased visitation to the region. In 1997, a Cooperative Management Agreement between BLM and the two cities identified the need to cooperatively manage the public lands now identified as the SCRR to protect the sensitive resources and open space values of those lands.

Today, threats and impacts to those special values necessitate that comprehensive management strategies be implemented, to achieve those goals of the SCRR. Off-road vehicle travel, target shooting, vandalism, and poor user ethics are contributing to resource damage and scarring of the SCRR landscape. Trash is accumulating in the once-pristine canyon pockets and washes of the SCRR and along the river. Proposals for new subdivisions and developments adjacent to the boundaries of the SCRR put public access to these lands in jeopardy. The damage to the SCRR's natural and cultural resources, as well as threats to open space and public access, clearly signal the need for more effective management of the SCRR.





Santa Clara River Reserve

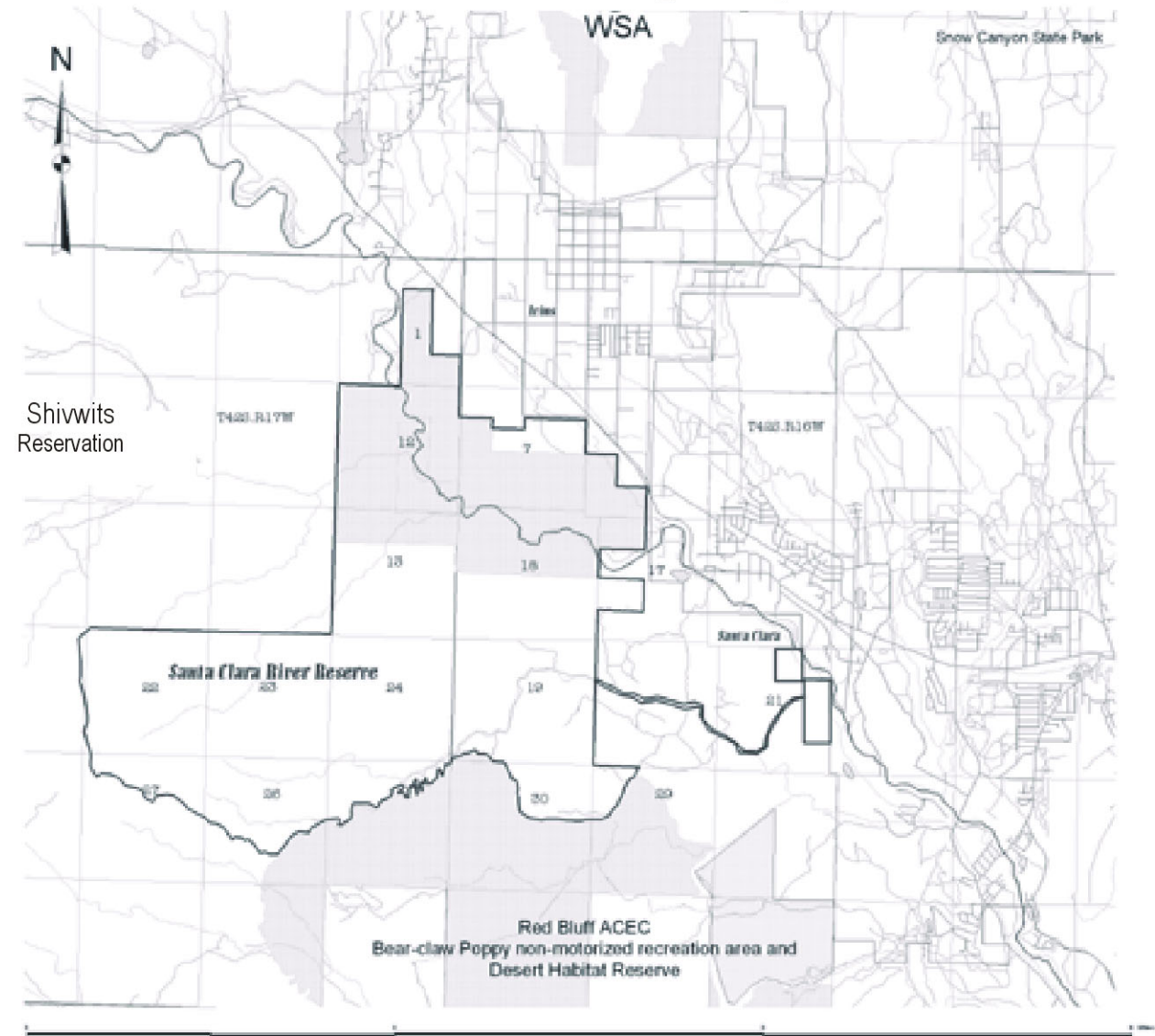
Mission

To preserve the cultural heritage, open space, recreational opportunities, and resource values of the Santa Clara River Reserve for our communities through a Recreation and Open Space Management Plan that provides for resource protection, interpretive education, traditional use, and planned recreation.

Goal

To foster a sense of place that balances the need for resource protection with the need for recreational opportunities that offer a range of experience outcomes. The Plan will identify educational opportunities that inform the public about sensitive resources and cultural heritage, and be responsive to changing community needs through adaptive management strategies.

Santa Clara River Reserve Boundary Map





Objectives

1. To establish programs to monitor and report impacts to sensitive resources.
2. To plan for the protection, rehabilitation or restoration of impacted sensitive resources.
3. To develop a trail network that is responsive to various user groups interests and ability levels, while minimizing future user conflicts. This will be accomplished by identifying the appropriate use for each trail and the importance of visitor experience.
4. To develop trailhead staging areas that will:
 - a. Contain parking.
 - b. Provide an opportunity for education and interpretation.
 - c. Provide an opportunity for recreation information.
 - d. Create key nodes in the SCRR where users can access a variety of experiences.
5. To develop a comprehensive interpretive plan that recognizes a diversity of learning styles.
6. To develop management zones that will be determined by social and physical carrying capacity and visitor experience.
7. To establish suitable areas for group activities.
8. To establish opportunities for overnight camping.
9. To establish a framework for future partnerships and volunteer participation.
10. To establish rules and regulations (management plans) to preserve the experience values for the recommended activities.

History of Planning Process

- 1985 – Citizen concerns were first voiced about the need for planned access and use of the Land Hill area.
- 1990 – Concerned citizens and BLM officials discuss options for management and protection of Land Hill archeological sites; their concerns were triggered by proposals from private developers to acquire public lands here for new commercial ventures, including an aerial tram way and golf course.
- 1995 – A Memorandum of Understanding was signed by Ivins, Santa Clara, the BLM, and the National Park Service (NPS) to explore options for protected open space and recreational opportunities on public lands on Land Hill, along the Santa Clara River, and other, adjacent public lands.
- 1996 – A Board was established, comprised of two representatives each from BLM, Santa Clara and Ivins, to develop and implement a management plan for the SCRR.
- March 1997 – The BLM and the two communities, facilitated by the NPS Rivers, Trails, and Conservation Assistance program, conducted a five-day planning charrette to gather community input and visions for the SCRR, recommend area boundaries, and develop a name that would reflect the goals of the project.
- August 1997 – As a result of the charrette, the BLM, Ivins, and Santa Clara entered into formal Cooperative Management Agreement (amended in 2003), allowing them to work together to design and manage the proposed SCRR.
- 1997- 2000 – Initial focus during this period was on planning for the construction of a cultural history museum on public lands at the top of Land Hill. For various reasons, this proposal was not carried forward to completion.
- 2001 – A cooperative agreement between the BLM and Utah State University's Department of Landscape Architecture developed concept plans for the SCRR through a three-day field workshop that involved the public and interested groups.
- 2003 – The Cooperative Management Agreement was amended to reconfigure the public land base of the SCRR and provide for flexibility in the cooperative management of the area.
- 2002-2005 – The BLM and the two communities initiated and sustained a Recreation and Open Space Management planning process with input, from multiple constituencies, received during monthly public meetings held at Ivins City Hall and through other contacts.



Issues and opportunities reflect those comments received during the 1997 Charrette, the 2002 Utah State Recreation Design Study, comments from the Three Rivers Trails Committee meetings, issues and public input from monthly SCRR Board meetings, and City Council meetings held in Ivins and Santa Clara.



Issues and Opportunities



Site History

The lower reach of the Santa Clara River has been used and modified by humans for thousands of years. Evidence of different cultures is found throughout the SCRR in the form of habitation sites, special activity areas, and rock art localities. During the Formative Period (ca. 700 B.C. to A.D. 1200) the indigenous people (labeled by archeologists as Ancestral Puebloans or Virgin Anasazi) became corn and bean farmers who irrigated their crops by diverting water from streams like the Santa Clara River. They constructed permanent village sites and produced fine quality ceramics. Populations living along the Santa Clara River appear to have increased between A.D. 700-1100 (Pueblo I-II), leaving abundant and tangible evidence of their presence on Land Hill, along the riparian corridor, and elsewhere in the SCRR. After A.D. 1200, archeological sites attributable to the Ancestral Puebloans become increasingly rare, suggesting that changing climatic conditions or other factors forced a change in lifestyle for these early farmers.

During the Late Prehistoric and Protohistoric Periods (after approximately A.D. 1200-1800), the only indigenous people who permanently occupied the region were the Southern Paiute. At springs and along the stream channels, they, too, practiced small-scale farming. Hunting and gathering of native plants were also important in the economic adaptations of the early Southern Paiute. The Shivwits Band of Southern Paiute continue to make the banks of the Santa Clara their homeland. (A presidential Executive Order, dated April 21, 1916, set aside land along the Santa Clara River as a reservation for the Shivwits Band of the Southern Paiute. The Shivwits Reservation forms a portion of the northern boundary of the SCRR).

Permanent agricultural settlements were established by Mormon pioneers along the Santa Clara River during the mid-19th Century. These settlements often displaced the Southern Paiute who had traditionally cultivated the same lands along the river. The early Mormon settlers of southern Utah used the nearby canyons and hills of the SCRR. Several geographic features still bear the names given to them by those early residents: “Big Rock,” “The Gate Rocks,” and Cove Wash.

Resource Issues

1. Archeology

- Archeological resources have not been fully documented or dated.
- Public interpretation and resource education is lacking.
- Many rock art sites are already damaged.
- Sites and rock art are “resources at risk” because of unregulated activities.
- Many rock art sites are horizontal – making them easy to damage through human contact.
- Additional archeological field inventories, as well as archival research, are needed to better document the variety of 19th and 20th Century activities that occurred in the SCRR.
- Sites in the SCRR are perhaps the best examples of Ancestral Puebloan riverine adaptations available for public appreciation within the entire Virgin River system.

2. Riparian

- Impacts to stream channel from motorized vehicles.
- Impacts to river banks caused by random and numerous entry points and soil compaction from stock animals and OHVs.
- Loss of riparian vegetation due to human impact from camping and paintballing.
- Degradation of water quality due to human and animal waste.
- Degradation of water quality due to trash and non-biological sources.
- Impacts to wildlife and avian species due to excessive noise.

3. Landscape

- Maintaining minimal contrast with visual resources.
- Protecting fragile cryptobiotic soils.
- Avoiding impacts to the dwarf bear-claw poppy and Astragalus habitats.
- Introducing invasive or non-native plant species.



Design Opportunities

Human Impact Issues

- Destructive behaviors are damaging fragile resources: paintball activity, OHV abuse, target shooting, rock climbing (bolting), and unregulated large groups.
- Increased populations have increased visitor use of the SCRR.
- Some recreation activities have exceeded the lands' carrying capacity.
- Humans are currently traveling cross-county and pioneering "routes."
- Vehicle use is impairing the visual quality of the landscape.
- Conflicts between passive and active recreation are putting human life in danger. For example hiking, picnicking, and site-seeing vs. hunting, target shooting, and off-road driving.
- Vehicle traffic activities on Land Hill cause visual impacts to views from Ivins.
- Trash dumping is degrading the landscape.
- Visitors to the site are not educated or informed about resources or etiquette.

- Use open space to provide connecting links between communities.
- Develop various zones that determine the level of recreation enhancement.
- Develop a diverse system of trails that reduces conflict and enhances visitor experience.
- Use rugged outback terrain for more advanced trails.
- Use areas close to urban interface to enhance opportunities for persons with disabilities.
- Interpret archeological sites through protective walkways and barriers.
- Develop access points at key locations.
- Use river corridor to provide site amenities.
- Develop a distinctive visual image that is recognizable to visitors.
- Design signage that educates the user about resources and use etiquette.



Management Issues

- Options for communities to apply for Recreation and Public Purpose Act (R&PP) leases from BLM must be preserved on those SCRR lands that would be appropriate for community uses.
- Federal grazing permit holders and private landowners must be provided access to their allotments and inholdings.
- Land Hill should be maintained in a natural setting.
- Vehicle traffic should be limited to designated roads.
- Acquisitions of private inholdings, particularly those with outstanding riparian or archeological resources, should be pursued by BLM or other partners, if the landowner is a willing seller.
- Gaining easements for public access through private inholdings should be maintained or enhanced, if the landowner is willing.
- Current law enforcement is not adequate to protect resource or site enhancements. Cooperative law enforcement and site management techniques should be used to better protect these resources.
- Non-designated roads and trails should be reclaimed and rehabilitated.
- Rehabilitation methods should maintain natural plant communities.

Site Analysis

Resource Analysis

Riparian

The Santa Clara River is the largest tributary to the Virgin River in southern Utah. It is typical of many Southwestern streams, being shallow with a sandy bottom. Seasonal management of irrigation releases from Gunlock Reservoir formerly sustained artificially high and continuous stream flows during the irrigation months, generally between March and September. During the late fall and winter months, when irrigation releases were halted, some stream sections were completely dewatered. In the future, the operation of a newly constructed pipeline could reduce stream flows through the SCRR (completed October 2004). This change could impact riparian vegetation through the SCRR. In 2005 flooding along the Santa Clara River removed riparian vegetation and significantly widened the stream channel. These natural and human caused resource changes will likely return the Santa Clara riparian corridor to more natural, pre-reservoir conditions.

Water Quality

Water quality is generally good with respect to salinity and all major ion concentrations. In 2003, the Santa Clara River was listed as an impaired stream for the amounts of Total Dissolved Solids (TDS) between the confluence of the Virgin River and Gunlock Reservoir (Tetra Tech 2003). The levels of TDS are influenced by variety of factors, including human uses, such as construction projects, motorized vehicle travel, and camping along the stream channel.





Vegetation

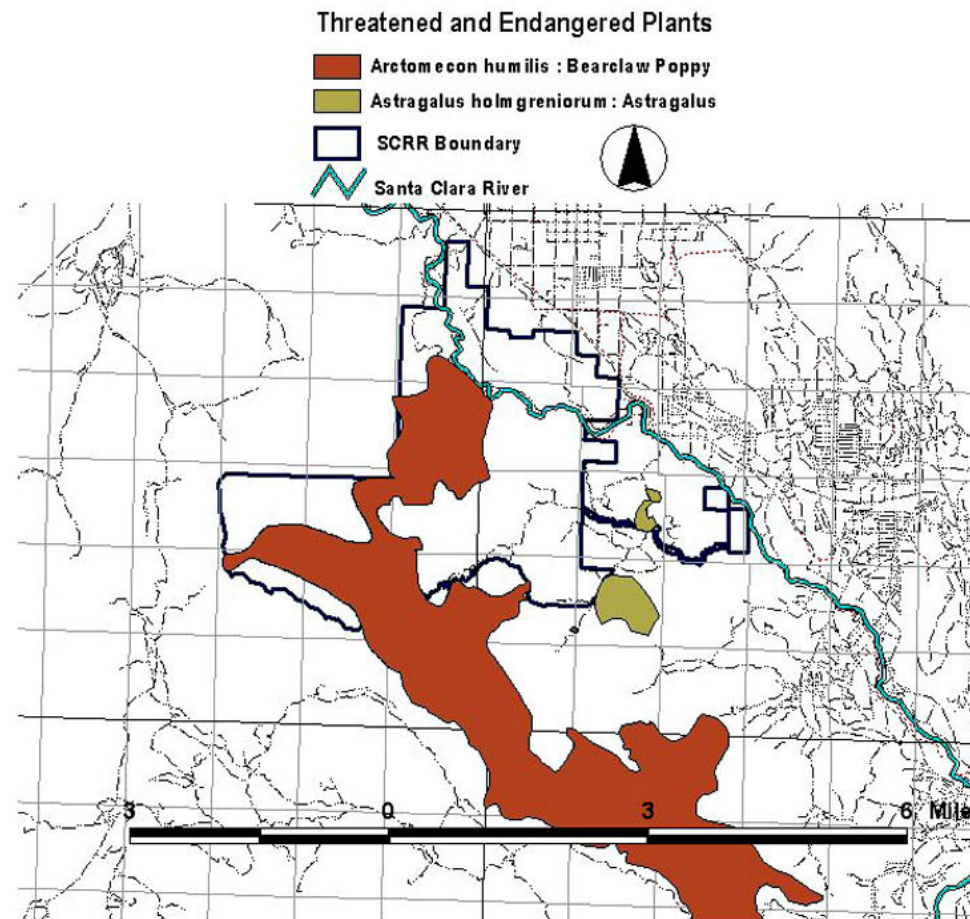
Riparian vegetation along the Santa Clara River includes Fremont's cottonwood, coyote willow, seep-willow, Goodings willow, velvet ash, and the exotic Russian willow and tamarisk. Dense grasses and grass-like vegetation along the stream banks, including cattails and sedges, stabilize soils, help to trap stream sediments, and dissipate flood flow energy. Quailbush, mesquite and rabbit bush grow in more upland areas away from the river.

The SCRR is habitat for two federally-listed plant species. Holmgren's milkvetch is found in the southeast corner of the SCRR, while the dwarf bear-claw poppy occurs extensively in the western portions of the SCRR.

Geology

The SCRR lies within a transition zone between two distinctive geographic provinces: the Great Basin and the Colorado Plateau. The lands of the SCRR are topographically varied, the result of geologic processes that have created landforms, and then eroded them away over the millennia. West of the Santa Clara River is a broad strike valley where the Shinabkaib Member of the Moenkopi Formation is widely exposed. The upper gypsiferous siltstone weathers into a powdery, erodible soil that provides the habitat for the dwarf bear-claw poppy. The rocky outcrops of Land Hill are comprised of the Shinarump Conglomerate.

Endangered Plant Species



Dwarf Bear Claw Poppy



Biological Soil Crusts
(CRYPTOBOTIC SOIL)



Soils

Soil types in the Santa Clara River flood plain are somewhat poorly drained. They are predominantly fine sand and during periods of high runoff, the hazard of erosion is severe. The soils of the riverbed are deep, predominately fine sand, and have an erosion hazard that is moderate to severe. The eroded slopes of the Santa Clara River are a rocky, stony soil. On the upper slopes, sandstone outcrops and cliffs occur. Soil development is minor because of continual deposits of material from higher lying positions. Erosion is moderate, and the sediment production is low to medium depending on the amount and kind of vegetation.

The valley floors of the SCRR are comprised of badland (BA) soil. Badland supports only a sparse stand of vegetation. Microbiotic crusts are found throughout the gypsiferous soils. Microbiotic crusts are formed by living organisms and their by-products, creating a surface crust of soil particles bound together by organic materials. Crusts are concentrated in the top soil and primarily effect processes that occur at the land surface or soil-air interface. These include soil stability and erosion, atmospheric nitrogen fixation, nutrient contributions to plants, soil-plant-water relations, infiltration, seedling germination, and plant growth. Microbiotic crusts do not respond well to compression. Disruption of the crusts brings decreased organism diversity, soil nutrients, and organic matter. Full recovery of microbiotic crusts from disturbances is a slow process.

Wildlife and Endangered Species

The Santa Clara River's riparian zone provides habitat that would be suitable for several native bird species that are listed under the federal Endangered Species Act. These species include the Southwestern willow flycatcher, and the Western yellow-billed cuckoo. To date, none of these species have been observed here in SCRR, but the riparian zone is managed by BLM to protect the quality of the habitat so that it could be occupied by these birds.

Other Federally-listed or sensitive species do occur in the SCRR or in adjacent areas. These are the American Bald eagle, ferruginous hawk, California condor, banded Gila monster, and the Virgin spinedace. The spinedace is a small native minnow, found only in the Virgin River Basin. The species is currently recovering in numbers, based on efforts by state, federal and local partners in the Virgin River Recovery Program. Maintaining and restoring fish habitat in the Santa Clara River is considered an important conservation goal for the Virgin spinedace and other native fish.

Archeological Sites

To date, more than 125 "sites" containing evidence of past human activities have been documented on public lands along just a three-mile segment of the Santa Clara River through the SCRR, between Santa Clara and Ivins. Additional sites are also located on the private lands of Anasazi Valley. Resources of



the SCRR provide evidence of human history from around 300 B.C., through mid-19th Century Euro-American explorations and settlement, and into modern times. A majority of the sites along the river near Land Hill are of two types: rock art ("petroglyphs" - incised or pecked images) and habitation sites. Other site types, found in relatively small numbers, include rock shelters with cultural deposits, temporary campsites, bedrock milling stones, and limited activity areas (e.g. lithic, ceramic, or groundstone scatters).

At least 51 sites containing rock art elements are found in the SCRR. A majority consist of one or more pecked or incised elements that were created by removing the dark patina ("desert varnish") to expose the lighter rock surface below. Curvilinear, rectilinear, and representational rock art elements occur as single isolated figures or groups in complex arrays. A small number of painted rock art elements ("pictographs") are also at Land Hill; some of these are believed to be of Southern Paiute origin.

The SCRR also contains habitation sites that can be affiliated to the Southern Paiute, dating from the Late Prehistoric and Protohistoric Periods.

Historic walls, 19th and early 20th Century inscriptions, wagon roads, drive trails, and other remains of Euro-American activities are also evident in the SCRR.





Landscape Character

Visual analysis of landscape character is a complex art that attempts to describe the character of the land using artful descriptions in terms of its form, line, color, texture, human impression and viewshed. These characteristics provide a basis for better understanding complex interrelationships that make up the landscape. They will also guide the planning and design process to avoid conflict with the various landscape elements. The four categories are descriptors, or unchanging features shaped by the earth's forces. This paradigm emphasizes human meaning associated with landscape properties based on past experience, future expectations, and sociocultural conditioning.

Form

When viewed from a distance, Land Hill is a striking form that uplifts from the edge of Ivins and wraps the urbanized valley like a long horizontal blanket.

Its presence dominates the foreground views from the cities of Ivins and Santa Clara. In the background, the White Hills and Beaver Dam Mountains cast a shadow on Land Hill as their forms reach high into the sky. This distant form, broken against the skyline into tiny sections of irregular shapes, looms heavily over the Santa Clara River valley. From the Apex Mine road the White Hills dominate, creating a rhythmic pattern of interlocking impenetrable spires. Vegetation here, as well as elsewhere in the SCRR, is small and clumping, contrasted only by the large rounded trees in the riparian zone.

Line

The flat horizontal line created by Land Hill merges with that of the South Hills and Red Bluff, creating the horizon edge that rings the urbanized communities of the St. George Basin. In contrast, the lines formed by the distant White Hills are vertical. This distant horizon line is irregular compared to the regular linear feature of Land Hill. Viewed from atop Land Hill, the Santa Clara River forms a meandering line of color with its contrasting vegetation that bisects the rugged uplands from the smooth form of the valley floor.



Color

The colors of the SCRR gradually reveal themselves like swatches of fabric. Land Hill and the adjacent hills appear dull and brown, an uninterrupted mass of barren land. This landform's beauty is its homogeneity. Beyond is the river corridor, dark green in the summer, dynamic and changing during the spring and fall. Deep yellows, oranges and reds all show signs of life. The valley floor takes on a grayish tone, a result of its gypsiferous soils. This tone crashes into the White Hills which are streaked of soft red and white tones and speckled with black and brown vegetation. The transition is abrupt.

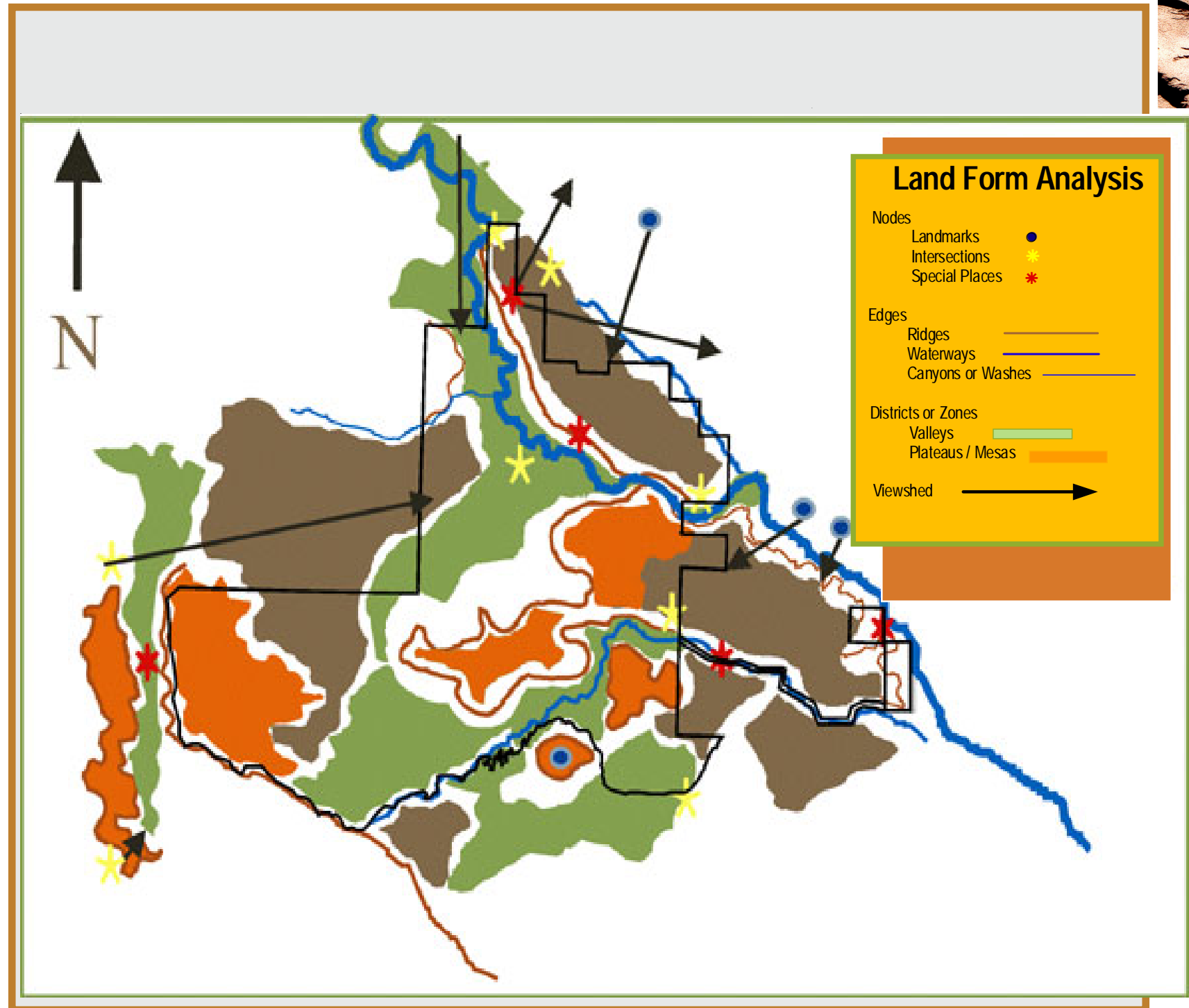
Texture

The textures of the land within the SCRR are varied. From a distance, the landforms appear smooth and flat. Closer, they reveal a coarse, rugged texture of jagged rock out-croppings and pillars of earth. The vegetation is stout but complex. Many trees and shrubs twist and contort exposing needles, quills, and thorns. The riparian area, in contrast, appears clumpy and soft.

Land Form Analysis

The adjacent map depicts the landform features that analyze the topography and landscape. Key points are identified as locations that are significant in the landscape. Edges are areas that are normally not crossed and help define landscape zones. Landscape zones are divided into three categories: valley, tilted slope, and mesa top. The zones show relative steepness, transition, and movement flow. This analysis aided in determining the location of trails, trailheads, and management zones.

The term viewshed describes the visual cone that a person has from a key observation point (KOP) of a particular impact. The arrows on the figure depict views from significant nodes that are KOP's in the community or in the SCRR. Each view corridor demonstrates the impact or degree of contrast development or change would have to that landscape. KOP's from inside the SCRR toward the urbanized area demonstrate the degree of visual solitude from that point.





Environmental Factors

Monthly Climate Averages

Sample Months	High °F	Low° F	Rainfall inches
Mar	60.3	31.7	1.00"
Jun	86.2	52.4	0.40"
Aug	102..0	67.8	0.56"
Oct	93.2	57.1	0.59"
Dec	54.3	33.2	0.70"
Yearly Average	64.8	27.4	0.82"

Source: St. George Area Chamber of Commerce

Extreme temperature varies from single digit lows in January to a sweltering 112 degrees in July. Santa Clara River Reserve varies in elevation from 2890 feet above sea level to over 4300 feet at its highest point.

Santa Clara River Reserve is located within the northern extension of the Mojave Desert and southern extension of the Great Basin. The desert climate contributes to generally clear skies, relatively mild winters and hot summers. Residents and visitors enjoy over 300 days of sunshine per year.

Urbanization

Population Growth

To understand the immense urbanization pressures being placed on the SCRR, one must look at the population trends. Fifty years ago the population of Washington County was approximately 10,000. The distance between communities, such as St. George, Santa Clara and Ivins, was measured in miles. Today that condition is vastly different.

Part-time residents in second homes add seasonally to the population density of the area. According to the 2000 U.S. Census, seasonal /recreational homes account for 12% of the total number of homes in Washington County, compared with a national average of only three percent (3%). Most areas of the nation are familiar with growth rates of one to two percent per year. Washington County communities often experience one percent growth per month.

The vast majority of the population migration into Washington County has come from California. The Midwest (Illinois and Indiana) and adjacent states (Wyoming and Idaho) account for the next higher sources of new full-time residents. The influx of retirees and families seeking milder climates and an active lifestyle in a dramatically scenic environment is expected to continue for decades. The percentage growth for Washington County has been nearly three times that for Utah, and 6 ½ times that for the United States as a whole; persons sixty-five years of age and over account for 17% of total population in Washington County, as compared with 8.5% in all of Utah.

Full-Time Population of Washington County

Census	Population	Percent Increase	Numerical Increase
1950	9,836	N/A	N/A
1960	10,241	4.4%	435
1970	13,669	33.1%	3,398
1980	26,065	90.7%	12,396
1990	48,560	86.3%	22,495
2000	90,354	86.1%	41,797
2003	104,132	13.2%	13,778

Full-Time Population of St. George

Census	Population	Percent Increase	Numerical Increase
1950	4,562	N/A	N/A
1960	5,130	12.5%	568
1970	7,097	38.3%	1,967
1980	13,146	85.2%	6,049
1990	28,502	116.8%	15,356
2000	49,663	74.2%	21,161
2003	56,382	11.9%	6,719

Full-Time Population of Santa Clara and Ivins

Census	Population	Percent Increase	Numerical Increase
Ivins			
1990	1,630	N/A	N/A
2000	4,450	173.0%	2,820
2002	5,554	24.8%	1,104
Santa Clara			
1999	2,322	N/A	N/A
2000	4,630	99.4%	2,380
2003	5,360	13.6%	730

Forecast Full-Time Population of Washington County

Year	Population	Percent Increase	Numerical Increase
2005	110,480	11.1%	11,038
2110	132,686	20.1%	22,206
2115	156,968	18.3%	24,282

Sources: Governor's Committee on Growth, Bureau of the Census, U. S. Department of Commerce

Urban Boundaries and Infrastructure

As the number of people living in the communities adjoining the SCRR has greatly increased, so has the demand for infrastructure and services that could potentially impact public lands and open space values. The nature of these communities has changed drastically over the last half century. In 1950, St. George and the surrounding communities were mostly agricultural communities. Today St. George has become a regional center for both commercial services and recreation. Adjacent municipalities have become bedroom communities for the urbanizing regional center. As more utilities are provided, public and privately owned open spaces are consumed to provide land easement corridors for the development of these utilities. All of this growth has consumed undeveloped land that had been open space.

The land required per house is equal to the building lot plus its allocatable percentage to provide services. Currently in the communities of Santa Clara and Ivins the average land consumption is three houses per acre, 3.3 people per house, plus additional land for roads, power, water, schools, parks, cemeteries, churches, offices, government buildings, shops, malls, convention centers, airports, etc. Collectively, Ivins and Santa Clara build about 210 homes per year, thus consuming more than seventy acres per year. Because of its more dense residential development, St. George City consumes less land per house as a building lot but consumes more per house because it provides more retail and commercial development than Ivins or Santa Clara.

Ivins and Santa Clara have annexed up to the boundaries of the SCRR, or have official annexation plans to do so on file with the county boundary commission. The result is that the communities and new developments will soon encroach to the boundaries of the SCRR. Historically, the property that offers housing lots immediately adjacent to permanent open space such as the SCRR, is the most desirable, thus increasing property values and demand on the resources.

Visitation

Washington County outdoor recreation opportunities:

Zion National Park attracts more than two million visitors annually.

Snow Canyon State Park welcomes approximately 500,000 visitors a year.

Red Cliffs Desert Reserve provides 140 miles of non-motorized trails.

BLM mountain bike trails include: Gooseberry Mesa, Hurricane Cliffs, and Bearclaw Poppy Trail network.

Rock climbing areas attract visitors to Zion National Park, Snow Canyon State Park, the Virgin River Gorge, Red Cliffs Desert Reserve, and various areas on BLM lands.

Spa/resorts attract many seeking health and fitness training and experiences.

Major athletic events bring international visitors to Washington County: the St. George Marathon, the Huntsman World Senior Games, softball tournaments, and the Dixie Roundup Rodeo.

Build-out projections for Ivins and Santa Clara vary from time to time as the various city Master Plans are discussed. Santa Clara projects 7,000-12,000 people which will generally follow the average of three housing units per developed acre. Ivins is anticipating 20,000-24,000 residents with two to three housing units per developed acre.



Governing Plans

BLM : St. George Field Office Resource Management Plan 1999
Ivins General Plan, January 2002
Santa Clara General Plan, 1995, revised 2002
Coordination Plan for Washington County Urbanizing Region, 1997

Related Plans

Washington County Regional Trails Master Plan, 2000
Red Bluff Activity Plan, 2000
Ivins Trails and Parks Master Plan, 2002
Santa Clara Trails and Parks Master Plan, 2003
Three Rivers Trail Community Project, 1995

Development Plans for Adjacent Lands

Adjacent to the SCRR are several large tracts of land that have tentative development plans. On the north end of the SCRR the Washington County School District has purchased fifty acres to build a high school – middle school complex. On the northwest edge are approximately 320 acres that are owned by a few private entities. Plans include agriculture, residential and commercial development. The commercial plans include an American Indian Cultural Center similar to the Polynesian Cultural Center of Hawaii. Ivins has discussed the possibility of building a baseball complex next to the school site and the possibility of a regional park of about ninety acres. A reservoir, to be located at the southeast corner of Land Hill, in Graveyard Wash, has been approved for the city of St. George.

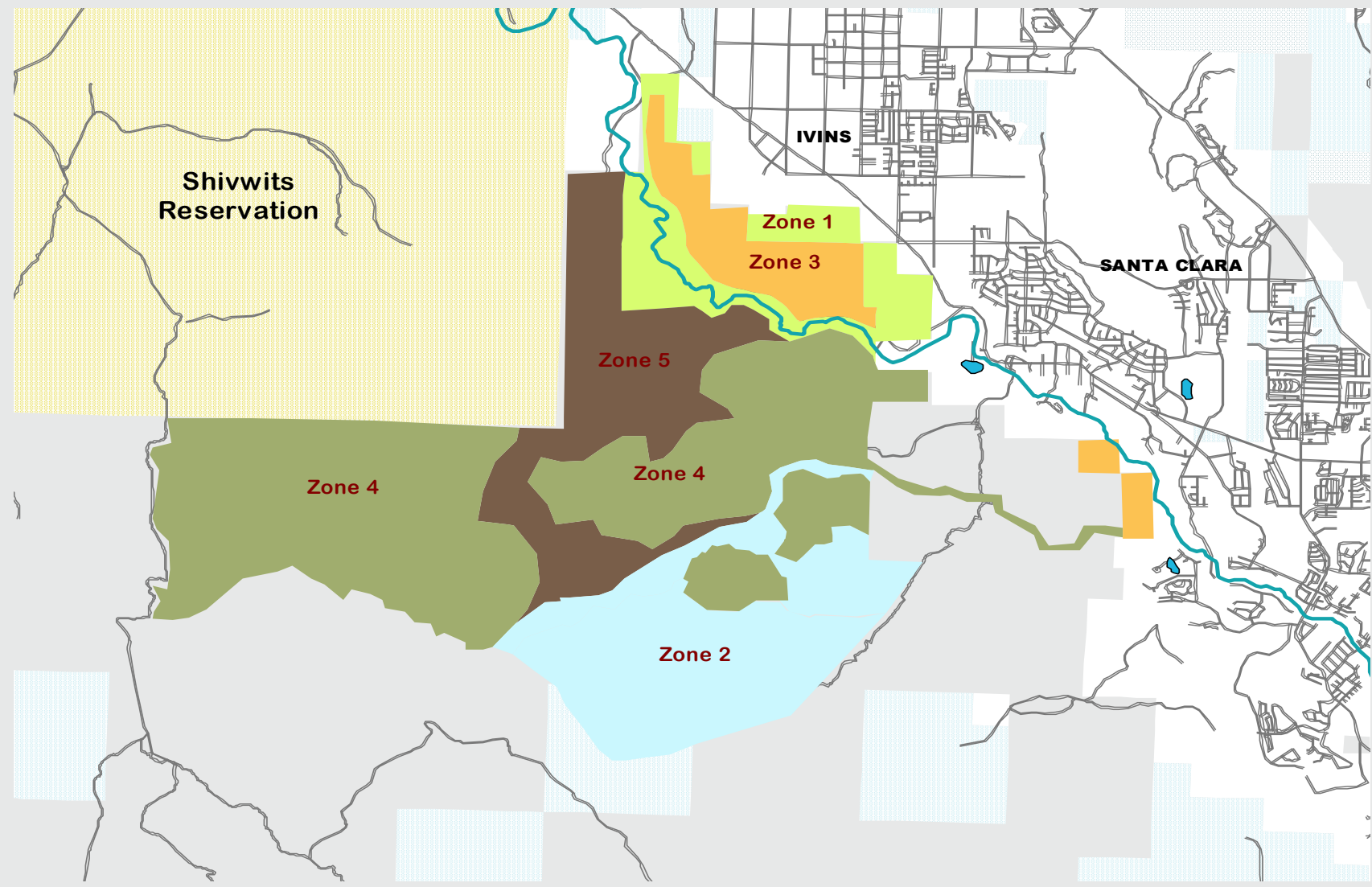
The Interstate 15 Utah/Arizona traffic count has steadily increased over the last five years to an estimated total of 6,647,025 in 2001. Lodging occupancy in St. George increased from 60.9% in 2001 to 63.6% in 2002.

Recreation Master Plan



"Desert land is a great teacher. The value of the last swallow of your canteen savoring the last bite and observing, you come to feel accepted by this wild, beautiful, harsh, uncompromising land." Ira Hatch, Indian Missionary

Management Zone Map



Experience Zones

Five management zones will be established to help assure that the goals of resource protection, open space protection, and a quality visitor experience are met. Development will focus on providing a diverse array of experiences for the user. Zones will be established to reduce conflict between differing experiential goals.

Zone 1 807 Acres <i>Urban Recreation</i>	
Zone 2 1843 Acres <i>Rural Motorized</i>	
Zone 3 670 Acres <i>Urban Protection</i>	
Zone 4 4225 Acres <i>Backcountry Recreation</i>	
Zone 5 1469 Acres <i>Backcountry Protection</i>	

Experience Zone Table

ZONE EXPERIENCE	General Description	Physical Development <i>Man – made improvements</i>	Managerial <i>Evidence of control</i>	Social <i>Expected user groups</i>	Visual Sensitivity	Experience <i>Goals and objectives</i>
Zone 1 807 Acres <i>Urban Recreation</i>	<p>Zone 1 encompasses areas that are immediately adjacent to primary roads and communities and also includes the 2½-mile Santa Clara River canyon riparian corridor.</p> <p>Resource sensitivities:</p> <ul style="list-style-type: none"> ▪ Riparian values ▪ Habitat for sensitive and listed species ▪ Viewsheds 	<p>High amount of change</p> <ul style="list-style-type: none"> ▪ Paved trailheads ▪ Dam structure ▪ Buildings ▪ Restrooms ▪ Primitive camping opportunities ▪ Paved and unpaved trails ▪ Kiosks ▪ Signs ▪ Fences ▪ Landscaping 	<p>High level of control</p> <ul style="list-style-type: none"> ▪ Regulation signage ▪ Fencing ▪ Gates ▪ Law enforcement or ranger presence ▪ Volunteer docents ▪ Fee stations <p>Restrictions and limitations:</p> <ul style="list-style-type: none"> ▪ Vehicle access ▪ Types of activities ▪ Separation of uses ▪ Permitted uses ▪ Hours of operation 	<p>High levels of visitation and high densities of diverse groups</p> <ul style="list-style-type: none"> ▪ Outdoor enthusiasts ▪ Heritage tourists ▪ Community members ▪ School groups ▪ Families ▪ Children ▪ Elderly ▪ Persons with disabilities 	<p>High level of sensitivity <i>BLM VRM Class 2</i></p> <p>Facilities should complement the existing environment and community. A design image plan and sign plan will be developed to guide the overall look of the built environment of the SCRR. This plan will be strictly followed in this zone.</p>	<p>Highly interactive recreation and educational experience.</p> <p>People are likely to encounter others with a variety of goals and interests. There will be little opportunity for solitude. Sights and sounds of human activity will be likely at all times. Encounters with large groups are also likely.</p>
Zone 2 1843 Acres <i>Rural Motorized</i>	<p>Zone 2 is an area at the southeast boundary of the SCRR near Boomer Hill.</p> <p>Resource sensitivities:</p> <ul style="list-style-type: none"> ▪ Dwarf bear-claw poppy ▪ Astragalus plants ▪ Cryptobiotic soils 	<p>Moderate amount of change</p> <ul style="list-style-type: none"> ▪ Natural-surface trailheads ▪ Motorized trails ▪ Signs ▪ Fences 	<p>Moderate to high level of control</p> <ul style="list-style-type: none"> ▪ Regulation signage ▪ Fencing ▪ Gates ▪ Law enforcement or ranger presence ▪ Regulations for user safety ▪ Types of activities <p>Restrictions and limitations: Off – trail/road travel</p>	<p>Moderate densities and single use</p> <ul style="list-style-type: none"> ▪ ATV recreational groups ▪ Motorcyclists ▪ Other users accessing other trails or sites including adjacent target shooters 	<p>Low to moderate level of sensitivity <i>BLM VRM Class 3</i></p> <p>This area is already heavily impacted from OHV recreational use. Signage will remain consistent with that of the rest of the SCRR. Dust and noise may be present.</p>	<p>Relaxed social backcountry experience</p> <p>Although noise levels will be increased, this zone is established for backcountry enjoyment by users on ATVs or motorcycles. Because the trail routes will be short, it is expected that this zone will primarily be used for staging to reach connecting trail routes.</p>

ZONE EXPERIENCE	General Description	Physical Development <i>Man – made improvements</i>	Managerial <i>Evidence of control</i>	Social <i>Expected user groups</i>	Visual Sensitivity	Experience <i>Goals and objectives</i>
Zone 3 670 Acres Urban Protection	<p>Zone 3 encompasses the Land Hill face—midway up the ridge and down the cliff face to the canyon floor.</p> <p>Resource sensitivities:</p> <ul style="list-style-type: none"> Archeological sites Rock art panels Viewsheds 	<p>Moderate amount of change</p> <ul style="list-style-type: none"> Paved trails Natural-surface trails Signs Fences Raised walkways 	<p>High level of control</p> <ul style="list-style-type: none"> Regulation signage Educational signage Fencing Gates Law enforcement, ranger or docent presence <p>Restrictions and limitations:</p> <ul style="list-style-type: none"> Vehicle access Permitted uses Group size Viewing distance Hours of operation 	<p>Varying densities with possible waves of large group clusters</p> <ul style="list-style-type: none"> Heritage tourists Community members School groups Children Elderly Persons with disabilities <p>Expect lower densities on trails and a constant stream of visitors.</p>	<p>High level of sensitivity <i>BLM VRM Class 2&3.</i></p> <p>Neighboring communities want to maintain an unscarred viewshed to this landscape. Visitor enhancements will be low scale, natural and follow the lines of the landscape.</p>	<p>Interactive educational experience</p> <ul style="list-style-type: none"> Interpretive talks Guided tours Signage <p>Visitors may experience interactive social situations during peak times.</p>
Zone 4 4225 Acres Backcountry Recreation	<p>Zone 4 includes the upland bluffs south of the Santa Clara River, the White Hills continuing toward Apex Road, and Cove Wash.</p> <p>Resource sensitivities:</p> <ul style="list-style-type: none"> Cryptobiotic soils 	<p>Low amount of change</p> <ul style="list-style-type: none"> Natural-surface trails Climbing area Primitive camping Hitching posts Equestrian campgrounds Signs 	<p>Low to moderate level of control</p> <ul style="list-style-type: none"> Information signage Designated use areas Fences <p>Restrictions and limitations:</p> <ul style="list-style-type: none"> No motorized vehicles Designated trail use only 	<p>Low densities, small group sizes, and separated areas of use</p> <ul style="list-style-type: none"> Hikers Mountain bikers Equestrians Rock climbers <p>Users will generally have a high skill level. Dogs and pack animals may be common.</p>	<p>Moderate level of sensitivity <i>BLM VRM Class 3</i></p> <p>Although this area is not as readily visible from the adjacent communities, trails and improvements will be designed to follow the landscape.</p>	<p>Challenging social backcountry experience.</p> <ul style="list-style-type: none"> More advanced trails with “preferred use” to separate use Remote locations Technical challenges <p>Occasional encounters with other groups may occur.</p>
Zone 5 1469 Acres Backcountry Protection	<p>Zone 5 includes the lowland areas to the southwest of the Santa Clara River.</p> <p>Resource sensitivities:</p> <ul style="list-style-type: none"> Dwarf bear-claw poppy Astragalus plants Cryptobiotic soils 	<p>Low amount of change</p> <ul style="list-style-type: none"> Natural-surface single-track trails Signs Primitive camping 	<p>Low to moderate level of control</p> <ul style="list-style-type: none"> Information signage Designated use areas <p>Restrictions and limitations:</p> <ul style="list-style-type: none"> No motorized vehicles Designated trail use only 	<p>Very low densities. Interactions with other groups are expected to be infrequent.</p> <p>Users will be skilled recreationists (bikers and hikers) capable of traveling long distances. Preferred use to separate use trails.</p>	<p>Moderate level of sensitivity <i>BLM VRM Class 3</i></p> <p>Area contains highly erodible saline soils and dense cryptobiotic crust. Any disturbance to the landscape will create a contrasting scar visible from a great distance. Trails will be maintained as single-track. There will be no structures in this zone.</p>	<p>Semi-primitive backcountry experience</p> <p>Area provides possible solitary experiences for hikers and bikers in the desert environment. Conditions will remain harsh and remote. Sites and sounds of other users may be apparent from activities on the cliffs above.</p>



Recreation Master Plan

Roads

Full Use - FR

County Standard Road
Paved or gravel

Limited - LR

Narrow or Two-track Road
Gravel or dirt

Trails

Type 5

Pedestrian - PED

Width generally accommodates two-lane and two-directional travel, or provides frequent passing turnouts

Commonly hardened with concrete or other imported material

No obstacles

Grades typically <8%

Trail Universal Access information is typically displayed at trailhead

Compatible users include walkers, mountain bikes, roller bladers, skate boarders

Horses and hand-carts are not compatible with this trail type

Type 4

Shared Non-motorized - SH

Multi-use Recreation Trail

Tread narrow – up to 40"

Allowance for passing

Native materials

Obstacles occasionally present

Blockages cleared to define route and protect resources

Grade to 10%

Clearances and turning radius to accommodate all uses

CIRCULATION LEGEND

Type 3

ATV - ATV

Motorized Recreation Trail

Width accommodates single-lane ATV or motorcycle travel

Will not accommodate full size motor vehicles

Unsafe for pedestrians, mountain bikes, or hikers

Natural dirt surface with some challenge including steep drops and obstacles

Equestrian - E

Single-track Recreational Trail

Tread narrow – less than 30"

Minimal allowance for passing

Native materials

Head clearances over 10'

Grades may occasionally be steeper than 10%

Obstacles and challenge to be expected

Turns will be switchbacks or climbing turns

Minimal signage

May not be suitable or enjoyable for bikes

Mountain Bike - MTB

Single-track Recreational Trail

Tread narrow – less than 30"

Minimal allowance for passing

Native materials

Overhead obstacles may be present over 6'

Grades may occasionally be steeper than 8%

Obstacles and challenge to be expected

Climbing turns will be incorporated

May not be suitable or enjoyable for horses

Type 2

Hike - H

Single-track Recreational Trail

Tread narrow – less than 30"

Minimal allowance for passing

Native materials

Overhead obstacles may be present

Grades may occasionally be steeper than 10%, including stair steps

Obstacles and challenge to be expected

Turns will be switchbacks

Minimal signage

May not be suitable or enjoyable for horses or bikes

Type 1

Foot Only - F

Narrow Interpretive Trail

Narrow single-file travel

Natural tread

Structures frequent or continuous; may include handrails, trailside amenities, boardwalks, and protection devices

Regulation signage will be frequent

Information and interpretive signs likely

*For more information about user types and trail construction standards refer to:
Appendix I – Trail User Summary
Appendix II – Trail Construction Standards*

Phased Development

Phase I – Establishment and Protection

- Establish Trailheads 2 and 4
- Install protective fencing and gates
- Establish River trail and rim trail
- Build connector trail
- Establish Petroglyph interpretive route
- Close and rehabilitate specified routes on Land Hill
- Collect baseline interpretive data
- Develop interpretive plan
- Provide basic regulation and site orientation information
- Sign open routes

Phase II – Expansion and Enhancement


- Establish Trailheads 3, 4 & 5
- Construct loop recreation trail
- Construct ADA access rim trails
- Expand interpretive information at Trailheads 1 & 2

Phase III – Image and Infrastructure

- Install final gateway elements at trailheads
- Install docent center at Trailhead 1
- Install river enhancement facilities

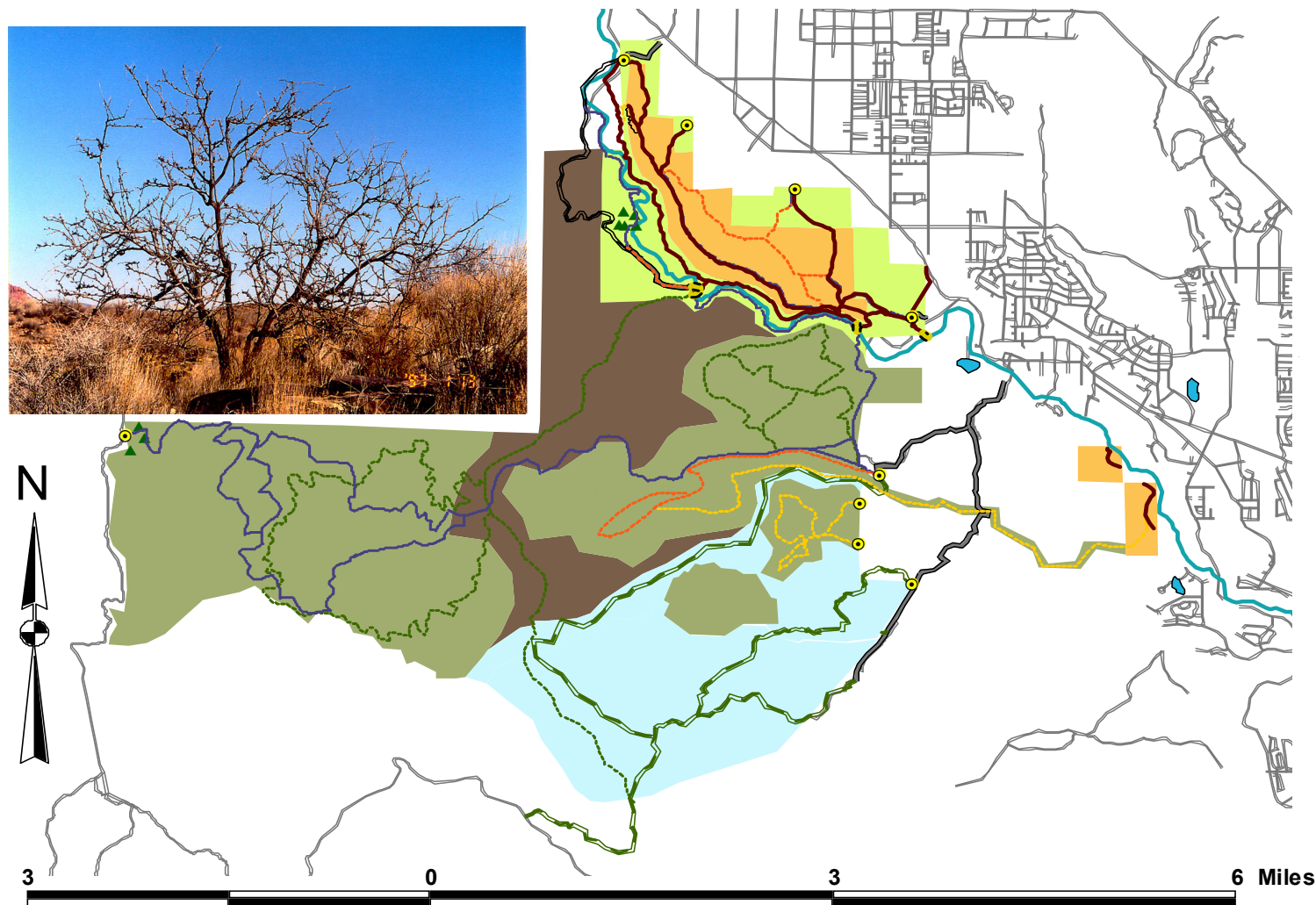
	2005	2006	2007	2008	2009	2010	2011
Phase I	X	X					
Phase II		X	X	X			
Phase III				X	X	X	X

Master Plan Recreation Activity Table

ZONE	Circulation Roads		Circulation Trails							Amenities and Resource Protection Enhancements
Type	Full Use	Limited	Type 5	Type 4	Type 3	Type 3	Type 3	Type 2	Type 1	
Preferred User <i>Refers to Design Standards not Regulation</i>	Full-size Vehicles	Authorized & Non-motorized Vehicles	Pedestrian	Shared – Non-motorized	ATV	Equestrian	Mountain Biker	Hiker	Foot Traffic	
Description <i>See Trail -Type Description Summary Below</i>	County Standard Road * Paved or gravel	Narrow or Two-track Road * Gravel or dirt	Highly Developed Trail	Multi-use Recreation Trail	Motorized Recreation Trail * Single-lane ATV or motor-cycle travel	Single-track Recreation Trail	Single-track Recreation Trail	Single-track Recreation Trail	Narrow Interpretive Trail	
Zone 1 807 Acres Urban Recreation	<u>.51 Miles</u> Road Segments Included: FR-1 <i>Santa Clara Access</i> FR-3 <i>South Hills Road</i>	<u>.4 Miles</u> Road Segments Included: LR-1	<u>5.9 Miles</u> Trail Segments Included: 5PED-B <i>River Trail</i> 5PED-C 5PED-D 5PED-E <i>Graveyard Trail</i> 5PED-F <i>Dam Trail</i> 5PED-G	<u>.80 Miles</u> Trail Segments Included: 4SH-C 4SH-E		<u>2.81 Miles</u> Trail Segments Included: 3E-E 3E-C 3E-D	<u>0.2 Miles</u> Trail Segments Included: 3MTB-A	<u>0.2 Miles</u> Trail Segments Included: 2H-C		Anasazi Valley Trailhead 1 <ul style="list-style-type: none"> 2 acre 10-15 car parking area, kiosk Ivins Trailhead 2 <ul style="list-style-type: none"> 5 acres 50 car parking area, accommodates school busses and RVs, kiosk, docent center, restrooms, shade, seating Graveyard Trailhead 3 <ul style="list-style-type: none"> 3 acre 3-7 car parking, kiosk Santa Clara Trailhead 4 <ul style="list-style-type: none"> 3 acres 20-30 car parking, restrooms, viewing spots, kiosk, shade and seating Scout Camp – Camp A <ul style="list-style-type: none"> 5 acres Large area for disperse camping/ fire rings Pedestrian Bridges <ul style="list-style-type: none"> 3 crossing the Santa Clara River Supports pedestrian travel only 5-foot wide foot bridge Boundary and Protective Fencing <ul style="list-style-type: none"> 2 miles 3-rung smooth wire range fence, tubular steel gates with lock

Type	Full Use	Limited	Type 5	Type 4	Type 3	Type 3	Type 3	Type 2	Type 1	Amenities & Resource Protection Enhancements
Zone 2 1843 Acres <i>Rural Motorized</i>	<u>.81 Miles</u> Road Segments Included: FR-2 Stucki Springs Road				<u>8.50 Miles</u> Trail Segments Included: 3ATV-A 3ATV-B 3ATV-C		<u>1.6 Miles</u> Trail Segments Included: 3MTB-A			Boomer Hill Trailhead 8 <ul style="list-style-type: none"> 3 ½ acre 15-20 car parking, large vehicles with trailer accommodated, restroom, kiosk Boundary and Protective Fencing <ul style="list-style-type: none"> 1 ½ acre 3 miles 3-rung smooth wire range fence, tubular steel gates with lock
Zone 3 670 Acres <i>Urban Protection</i>			<u>4.50 Miles</u> Trail Segments Included: 5PED-A Rim Trail 5PED-E Graveyard Trail	<u>1.85Miles</u> Trail Segments Included: 4SH-A 4SH-B 4 SH-C		<u>1.76 Miles</u> Trail Segments Included: 3E-D 3E-E		<u>0.3 Miles</u> Trail Segments Included: 2H-A	<u>0.6 Miles</u> Trail Segments Included: 1F-A Petroglyph Trail	Rehabilitated Disturbances <ul style="list-style-type: none"> 1 mile Includes roads and other unauthorized disturbances Roads identified are redundant and poorly placed causing resource damage
Zone 4 4225 Acres <i>Backcountry Recreation</i>				<u>3.0 Miles</u> Trail Segments Included: 4SH-D		<u>10.1 Miles</u> Trail Segments Included: 3E-A 3E-A2 3E-B 3E-B2 3E-C	<u>10.2 Miles</u> Trail Segments Included: 3MTB-B 3MTB-B2 3MTB-B3 3MTB-C	<u>6.3 Miles</u> Trail Segments Included: 2H-A Cove Wash Trail 2H-B South Hills Trail		Cove Wash –Trailhead 5 <ul style="list-style-type: none"> 2 acre 3-7 car parking, kiosk 4-5 truck/trailer parking South Hills - Trailhead 6 <ul style="list-style-type: none"> ¼ acre, access point with kiosk South Hills South – Trailhead 7 <ul style="list-style-type: none"> ¼ acre, access point with kiosk Apex – Trailhead 9 <ul style="list-style-type: none"> ½ acre 4-5 truck/trailer parking 1-3 car parking, kiosk White Cliffs Equestrian Camp - Camp B <ul style="list-style-type: none"> 4 acres 4 campsites, hitching posts, fire ring, tables
Zone 5 1469 Acres <i>Backcountry Protection</i>		<u>0.9 Miles</u> Trail Segments Included: LR-1				<u>1.71 Miles</u> Trail Segments Included: 3E-B	<u>3.70 Miles</u> Trail Segments Included: 3MTB-A 3MTB-C			
Totals By Use	1.32 Miles	1.30 Miles	10.40 Miles	5.65 Miles	8.50 Mile	16.38 Miles	15.70 Miles	6.80 Miles	0.60 Miles	Trailheads = 20 Acres Motorized Trails = 8.50 Miles Non-motorized Trails = 55.53 Miles

“Aridity more than anything else, gives the western landscape its character. It is aridity that gives the air its special dry clarity; aridity that leads the grasses to evolve as bunches rather than turf; aridity that exposes the pigmentation of the raw earth and limits, almost eliminates, the color of chlorophyll; aridity that erodes the earth in cliffs and badlands rather than in softened and vegetated slopes, that has shaped the characteristically swift and mobile animals of



Full-size map provided in rear pocket.

Santa Clara River Reserve Master Plan

LEGEND

	Full Use Roads		Trail Meads
	Limited Roads		Camping
	ATV Trails		Pedestrian Bridge
	Type 5 - Pedestrian		Santa Clara River
	Type 4 - Shared	SCRR ZONES	
	Type 3 - Equestrian		Zone 1
	Type 3 - Mountain Bike		Zone 2
	Type 3 - Hike		Zone 3
	Type 2 - Interpretive		Zone 4
			Zone 5



Visitor Experience

Built Image Goals

Built elements within the SCRR will be used to enhance the visitor's experiences and will also follow a strict set of guidelines to assure harmony with the natural landscape and landform.

Goals:

- **Features will blend visually with the natural surroundings.**

The placement of facilities, amenities and trails will respect the natural colors, textures, shapes, and lines of the natural landscape. The BLM's Visual Resource Management (VRM) guidelines will be the standard for the design of features and their integration into the site.

- **Materials will remain consistent throughout the SCRR.**

Architectural models will be developed for repeated elements. These standards will be used in all modified locations. New features should follow a consistent theme as they are added across the site and over time.

- **Interpretive possibilities can be maximized by enhancing their sense of place with complementary features.**

Built features will draw on images from prehistoric architectural styles. This imagery will drive the architectural theme, reinforce interpretive themes and education, and create a unique sense of place for the visitor.

- **Archeological protection will be maximized.**

Structures and signage will be constructed to protect archeological features. They will be designed in a way to maximize view options while maintaining the highest level of protection for sites.

- **Circulation will be used to enhance and guide the experience.**

Using techniques such as axial entry, meandering walks, and the element of surprise, the visitor can have a dynamic experience that changes with the natural elements.

- **The amount of land disturbed and the intensity of impacts will be minimized.**

Whenever possible, facilities and amenities will incorporate native vegetation, landscape screens, and organic shapes to minimize total acres disturbed. Flat grading and total clearing of areas will be avoided. Instead the sites will be sculpted

into the representative landform. Roads, trails, picnic sites, and parking areas should be constructed to the minimum standard needed to accommodate expected use. All construction projects will delineate a boundary line between where impacts such as construction, heavy equipment, and storage of supplies and materials is acceptable and where the natural conditions are not to be disturbed. Over-engineering is discouraged. Projects will include a plan for re-vegetating and returning a natural grade or slope to areas that have been disturbed.

Built Image Guidelines

Recommended Colors

Colors should reflect the surrounding native landscape.



Recommended Materials

Natural materials or those that represent desert imagery.

Cut Stone



River Rock



Rusted Metal



Wood



Recommended Architectural Image



Landscape Plants and Rehabilitation

Generally any rehabilitation, seeding, or planting that is done inside the SCRR should be done with native species. A list of potential common plants is located in Appendix III. Although this is not a complete list, it does include those species most commonly found in the SCRR. Any substitutions must be approved.





Interpretation and Education

The SCRR will have a strong emphasis on interpretation and public education. It is envisioned that the area will provide both delivered and experiential messages, including a museum, docent center, guided tours, and interpreted walks. An interpretive plan will be developed to guide signage, themes, and topics.



Trail Design Standards

Trails will be designed and constructed to benefit the preferred user (Chapter 4- pg. 22). Goals and objectives will be developed for each trail segment prior to construction, placing the trail into the appropriate design standard category according to Appendix I & II.

Action Items

- **Develop a Sign Plan**
- **Develop an Interpretive Plan**
- **Develop an Architectural Program**
- **Develop a Built Image Guide**

Santa Clara River Reserve Management

Inter-Local Cooperation

The Cooperative Management Agreement (2003) establishes that the communities of Ivins and Santa Clara will work together to share resources for the support of the SCRR.

The Board will encourage the creation of a friends group to assist and support the SCRR.

Facility Maintenance

Maintenance funding has not been secured for the SCRR. Possible strategies for long-term maintenance include:

- Solicit help from local scout troops to perform routine clean-ups.
- Develop trail patrols and adopt-a-trail programs to encourage user group maintenance.
- Develop corporate sponsorships.
- Utilize city and BLM current maintenance staff.
- Through a cooperative agreement and collected funds, hire one part-time maintenance person to monitor and fix facilities.

Law Enforcement

Law enforcement issues related to vandalism and neglect are a serious issue in the SCRR. Individually neither the BLM nor the cities of Santa Clara or Ivins have adequate law enforcement capabilities to patrol the entire SCRR on a routine basis. However, working cooperatively there is adequate capability to respond to any serious incident.

The law enforcement strategy for the SCRR will be a multi-tiered process.

1. Install gates and signs to control access points.
2. Designate trails and enhance facilities to increase public watch on resources.

3. Focus on education of users through signage and public outreach.
4. Enlist volunteer docents and trail patrols to monitor facilities and educate the public.
5. Post visible regulations to encourage compliance through peer pressure.
6. Require registration and fee collection from all overnight visitors.
7. Schedule routine maintenance checks to report and repair vandalized facilities.
8. Assure communication and random checks from city, county and federal law enforcement officers to enforce serious violations and enhance public safety.



Use Regulations and Management Strategies

Use Regulations and Management strategies are listed by Zone in the following pages. Rules and Regulations are consistent with federal, state, and local laws and ordinances. Those agencies having special jurisdiction over certain activities on lands within the SCRR have been coordinated with, including DWR and the Washington County Sheriff's office.

Adaptive Management

The Cooperative Management Agreement (CMA), amended in 2003, provides for the inclusion of the adaptive management process. This process assumes that no plan is infallible and that future needs or information may necessitate changes to the design or management as described in this Management Plan.

Changes may be recommended by the SCRR Board or any member of the public. Changes can only be made if they meet both cities' General Plans and the St. George Field Office Resource Management Plan and if they are approved by both City Councils during a public process and the St. George Field Office Manager. The Santa Clara River Reserve Board may not make unilateral decisions that change the Management Plan.

Major changes or additions to designed facilities or those causing significant landscape disturbances will also be subject to the environmental review process.

Use Regulations and Management Strategies Table

ZONE EXPERIENCE	Motorized Vehicle Access	Fire Arms	Trail Uses	Camping	Fires	Other Limitations & Prohibited Activities	Expected User Etiquette
Zone 1 807 Acres <i>Urban Recreation</i>	<ul style="list-style-type: none"> ▪ Designated routes only ▪ Authorized or permitted users only ▪ No off-road vehicle use 	Prohibited: <ul style="list-style-type: none"> ▪ No hunting ▪ No target shooting ▪ No paint ball 	<ul style="list-style-type: none"> ▪ Non-motorized only ▪ Mountain bikers and equestrians must ride on trails posted for their use ▪ Mountain bikes and horses must remain on designated trails at all times ▪ Competitive events prohibited ▪ Community, non-competitive events and tours will be allowed with permit 	Camping is allowed only in the designated “Boy Scout” camp area. <ul style="list-style-type: none"> ▪ Permits will be required of all campers ▪ Recommended group size limit is 100 persons ▪ All vehicles and camping gear must remain in camp zone ▪ All trash must be removed ▪ No overnight stays at trailheads ▪ Other regulations may apply 	Camp Fires: <ul style="list-style-type: none"> ▪ Permitted in designated “Boy Scout” camping area using approved or provided containment units Charcoal Fires: <ul style="list-style-type: none"> ▪ Permitted inside barbeques in identified picnic areas along the river corridor 	Limitations: <ul style="list-style-type: none"> ▪ Access to trail heads limited to daylight hours Prohibited activities: <ul style="list-style-type: none"> ▪ No trash dumping, ▪ No tree cutting. 	<ul style="list-style-type: none"> ▪ Pack It In, Pack It Out ▪ Stay to the right on trails ▪ Keep bike travel in control and at slower speeds ▪ Avoid gathering on trails ▪ Respect wildlife ▪ Never touch rock art ▪ Adhere to posted additional site etiquette ▪ Keep children and animals under control ▪ Respect other users
Zone 2 1843 Acres <i>Rural Motorized</i>	<ul style="list-style-type: none"> ▪ Designated roads only ▪ Full-size vehicles and OHVs allowed ▪ Full-size vehicles and OHVs must remain on designated routes 	Limited: <ul style="list-style-type: none"> ▪ Seasonal hunting with valid license is allowed ▪ Off-road retrieval by vehicle is prohibited 	<ul style="list-style-type: none"> ▪ Designated motorized trails ▪ Competitive events prohibited ▪ Community, non-competitive events and tours will be allowed with permit 	<ul style="list-style-type: none"> ▪ Primitive day use only. 	Camp Fires: <ul style="list-style-type: none"> ▪ Allowed in approved staging areas ▪ Subject to County fire restrictions 	Limitations: <ul style="list-style-type: none"> ▪ None Prohibited activities: <ul style="list-style-type: none"> ▪ No trash dumping, ▪ No tree cutting. ▪ No off-trail vehicle use 	<ul style="list-style-type: none"> ▪ Pack It In, Pack It Out ▪ Travel in control and at reasonable speeds ▪ Stay on trail ▪ Pass at wide spots ▪ No trail cutting ▪ Respect wildlife ▪ Respect desert vegetation

ZONE EXPERIENCE	Motorized Vehicle Access	Fire Arms	Trail Uses	Camping	Fires	Other Limitations & Prohibited Activities	Expected User Etiquette
Zone 3 670 Acres <i>Urban</i>	<ul style="list-style-type: none"> No motorized vehicle access is provided for in this zone Cross-country vehicle travel is prohibited 	Prohibited: <ul style="list-style-type: none"> No hunting No target shooting No paint ball 	<ul style="list-style-type: none"> Non-motorized trail use only Equestrian use limited to designated equestrian trails Mountain bikes must stay on trails, and adhere to 10mph limit All users must stay on designated trails Community, non-competitive events and tours will be allowed with permit Competitive events prohibited 	Prohibited.	Prohibited.	Limitations: <ul style="list-style-type: none"> Some trails and areas around rock art sites may only be accessible when accompanied by a SCRR docent. Group size here is limited to no more than 10 persons. Prohibited activities: <ul style="list-style-type: none"> Damaging archeological sites Off-trail use No trash dumping No tree cutting 	<ul style="list-style-type: none"> Trail users stay to the right Bikes keep speeds slow Avoid gathering on trail Respect wildlife Never touch rock art Adhere to posted additional site etiquette Keep children and animals under control Respect other users
Zone 4 4225 Acres <i>Backcountry Recreation</i>	<ul style="list-style-type: none"> No motorized vehicle access Off-trail travel is prohibited 	Limited: <ul style="list-style-type: none"> Seasonal hunting with valid license is allowed Game retrieval using a motorized vehicle is prohibited Off-trail retrieval limited to foot access 	<ul style="list-style-type: none"> Non-motorized trail use only Equestrian use limited to designated equestrian trails Mountain bikes must stay on trails Community, competitive events, and tours will be allowed with permit. Additional limitations may apply. 	Designated and Primitive Camping: <ul style="list-style-type: none"> Campgrounds limited to designated sites. Primitive dispersed camping is allowed, but sites must be accessed by foot, horse, or mountain bike. Campsites must be located at least 25' away from designated trails. 	Camp Fires: <ul style="list-style-type: none"> Must be contained by suitable fire rings. 	Limitations: <ul style="list-style-type: none"> Human waste must be properly removed from backcountry Backcountry camping size limited to of 8 per group Competitive events limited to 50 participants Day use group size limited to 20 persons Prohibited activities: <ul style="list-style-type: none"> No trash dumping No tree cutting No off-trail vehicle use 	<ul style="list-style-type: none"> Pack It In, Pack It Out Leave No Trace and Tread Lightly backcountry principles apply Use appropriate preferred route whenever possible

ZONE EXPERIENCE	Motorized Vehicle Access	Fire Arms	Trail Uses	Camping	Fires	Other Limitations & Prohibited Activities	Expected User Etiquette
Zone 5 1469 Acres <i>Backcountry Protection</i>	<ul style="list-style-type: none"> ▪ No motorized vehicle access ▪ No off-road vehicle use will be permitted 	Limited: <ul style="list-style-type: none"> ▪ Seasonal hunting with valid license is allowed ▪ Game retrieval using a motorized vehicle is prohibited ▪ Off-trail retrieval limited to foot access 	<ul style="list-style-type: none"> ▪ All trails will be for non-motorized use only ▪ All users are restricted to posted open trails and must remain on trail at all times ▪ Competitive events prohibited ▪ Commercial tours restricted to a total group size of 12 persons within 1 hour ▪ No off-trail travel 	Prohibited.	Prohibited.	Limitations: <ul style="list-style-type: none"> ▪ Group size limits Prohibited activities: <ul style="list-style-type: none"> ▪ No trash dumping ▪ No tree cutting ▪ No off-trail vehicle use 	<ul style="list-style-type: none"> ▪ Avoid gathering on trail ▪ Respect wildlife ▪ Stay on trails ▪ Keep animals under control

Funding and Fee Collection

i. Base Funding

Currently the SCRR Board has been successful in cooperating to raise the necessary funds to implement the first phase of the ROMP. These funds include one-time base funding, state grants, and private donations. However, funding for the SCRR in terms of line item dollars can only be expected on a year-by-year basis. All three partnering entities have committed to equally sharing costs; however, additional funds and in-kind donations will need to be raised and received for full implementation of this plan.

ii. Volunteers and Docents

Volunteers, including the AmeriCorp teams, will be welcomed and needed through all stages of development. All volunteers working for the SCRR should be under a Federal Volunteer Agreement before doing work on Public Lands.

A docent program will be developed to assist in site interpretation and protection of Petroglyphs and Cultural Sites. All site docents will be required to specialize in “Site Steward Training” to be offered by the BLM or partnering community.

AmeriCorps is a federally subsidized program that provides young volunteers to a community for a period of 4-10 weeks. Communities typically must provide adequate housing and other support service for the teams. The SCRR Board plans to pursue a team(s) to assist with trail construction.

iii. Cooperative Agreements

Cooperative agreements may be entered into as a tool that can be used by the Bureau of Land Management to share funding and reduce accounting and procurement costs. Agreements will be drafted for each stage of implementation and long-term maintenance expenditures.

iv. Grants and Donations

The SCRR Board is committed to pursuing additional grant funds to offset the cost of future design implementation. Most grant programs require matching funds that will need to come from in-kind or cash donations.

Generous donations have already been received for the first phase implementation of the project; however, more funds are needed. Interested parties are encouraged to donate through the cities of Santa Clara or Ivins.

All grant benefactors and donors will be recognized on site through the donation recognition program to be developed.

v. Fee Collection

Fee collection is not planned for immediate implementation but may be needed in the future to sustain facilities and programs. Because the SCRR is committed to being free access open space for the community, fees would only be collected for enhanced services. A volunteer donation box may preempt any required fee structure as a way to increase enhancement funds. Fee service examples might be:

- Camping
- Large group gatherings
- Guided docent tours
- Parking

Fees would be collected through the BLM Fee Demo Program and managed and distributed through a cooperative agreement. Fees will also be collected from any commercial tour company or vendor who wishes to do business in the SCRR through the Federal Special Recreation Permit process (SRP).

Adjacent Lands

The Santa Clara River Reserve (SCRR) borders private and municipal lands at its eastern edge. The Board is concerned about development that could impact the goals for which the SCRR was established.

1. Access

- Access to the SCRR will only be allowed at designated access points.
- Private citizens will not be allowed to access the SCRR via a private entrance gate.

- New developments should provide access to designated SCRR entry locations.
- New trails will not be developed to accommodate private developments.
- Cities should maintain public easements through private developments to assure maintained public access.

2. Image

- Lands above the 2900' elevation mark have the same viewshed sensitivities as those found in Zone 3 of the SCRR. Any development on these lands could negatively impact open space views.
- It is recommended that built features adjacent to SCRR lands show little contrast with the natural landscape and not detract from the open space view .
- It is recommended that boundary walls and fences be consistent with SCRR architectural guidelines.

3. Zoning

- It is recommended that the cities zone all lands above 2900' elevation as open space.
- It is recommended that cities adopt architectural guidelines for adjacent lands that complement those of the SCRR.

Land Tenure Adjustments

SCRR lands will remain available for communities or other public entities under R&PP or right-of-way application in accordance with guidance established under the St. George RMP. Facilities for communities such as parks, museums, and paved pathway systems would complement the SCRR mission. All applications will be subject to an environmental review on a case-by-case basis. However, through the CMA, lands within the SCRR boundaries will not be available for disposal or transfer out of public ownership for private interests.

Land Acquisitions

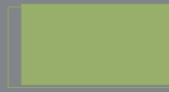
The following map indicates those inholdings and adjacent lands which the SCRR Board would like to acquire from willing sellers to enhance the management or resource protection of the SCRR lands and their priorities. Several areas have been identified for easement acquisitions. In these areas, trail or road access alignments are needed immediately to facilitate circulation. In the future some of these lands may also be desirable for acquisition into the SCRR for more intense recreation amenities.





Land Tenure Adjustment Map

Priority Acquisition Lands for
Inclusion into the SCRR
With Willing Seller



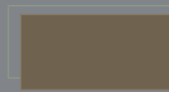
Priority Trail Easements



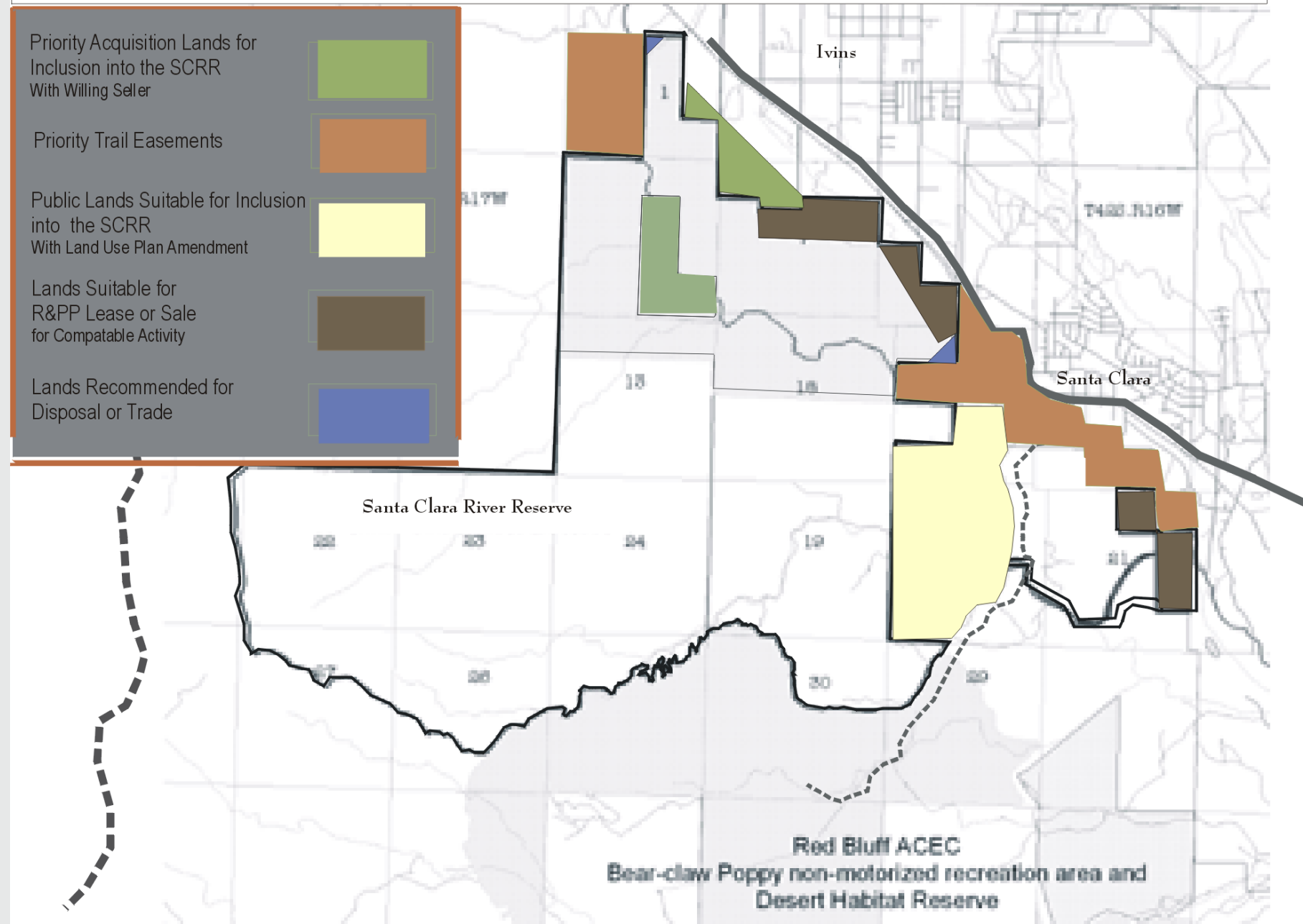
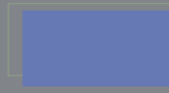
Public Lands Suitable for Inclusion
into the SCRR
With Land Use Plan Amendment



Lands Suitable for
R&PP Lease or Sale
for Compatible Activity



Lands Recommended for
Disposal or Trade



Vision for the Future



To become a model of joint federal and community efforts in establishing a sanctuary that encourages appreciation of historical, ecological and recreational values.

By listening to the earth, we become attuned to the energy of the universe, for this energy is manifested in the air as wind, on the earth as water and land, and in the sky as stars. Energy in flat open spaces is different from energy on a plateau. Each type of landform has a particular kind of energy associated with it, and becoming aware of the primeval energy of the land and the power of place requires opening your self to the natural world.



Landscapes can speak to you if you listen. They can reveal their moods if you feel them. They can show you their true nature if you learn to see and experience them directly. EVA WONG

APPENDIX I

Trail User Summary

Most of the following summary of trail users' characteristics was taken from Building Better Trails, International Mountain Bicycling Association, 2001. Only uses provided for in the SCRR Master Plan are described in this summary.

Pedestrian

Walkers: Are usually out for a short jaunt, two miles or less. They prefer to be close to civilization and signs of human presence and may not be knowledgeable in outdoor ethics. They do fine on short trails that give them a direct path from one natural feature to another. They are often out for reasons other than trail use: heritage tourism, bird watching, fitness, or family activity. Many may be pushing or pulling wheeled devices such as strollers or wagons.

Roller Blader / Skate Boarder: These small wheeled users usually travel short distance and in an out and back fashion. They require very slight grade changes and very smooth surfaces to enjoy a path. They can take up more space on trails as they traverse back and forth to slow their speeds.

Road Cyclist: Ride bikes designed for pavement. They travel long distances at relatively fast speeds. Obstacles, even small ones, can be dangerous to riders. They tend to avoid natural surface trails and crowded bike paths for this reason.

Commuters / Novice Riders: Will ride a variety of bikes and generally stay close to town. They enjoy riding away from the dangers of the roadway, but do not mind other non-motorized traffic. Speeds for these users are comparatively slow, but they usually ride in pairs or groups. They prefer flat, non-technical terrain, with direct routes to places of interest or key nodes in the community such as parks, picnic areas, or scenic overlooks. They sometimes have other benefit goals similar to walkers.

Foot Travelers

Hikers: Are usually familiar with the outdoors and like a more strenuous walk. They can handle difficult terrain and steep grades. They usually stay on trails if they are direct and interesting.

Rock Climbers: Use trails to reach climbing areas. Contour trails may meander too much for their needs. The want direct access - grade and difficulty are not a concern.

Backpackers: Yearn for a backcountry experience, and will travel many miles to attain it. Even though they have an intended destination, they are less apt to short cut because they carry heavy loads that hinder maneuverability. Gentle trail grades linking natural features help keep long distance foot travel interesting. Water sources should be regularly spaced and near suitable campsites.

Trail Runners: Enjoy connecting trail loops to add variety to their workouts. Most runners want several miles of rolling contours with occasional challenging sections.

Equestrians

Equestrians: Are the heaviest, widest, and tallest non-motorized users. Their trails require a wide corridor and high ceiling. Contour trails with durable tread are the most sustainable. Hoofs can tend to cause divots in softer soils and could pose a danger to foot travelers or cyclists. Horses can spook easily from approaching traffic and narrow crossing devises. When designing trails for horses, include water crossings where possible, but make them wide and safe. Also create long loops trails for day long rides.

Bikers

Beginning Cross-Country: These mountain bikers are casual cyclists who like gentle, relatively short trails with few challenges. As they improve their skill they will seek longer, more difficult trails. Rough, arduous or twisty sections satisfy the need for technical challenge and help control speed. Mountain bikers tend to stay on trails if the ride is fun.

Avid Cross-Country: Mountain bikers are experienced cyclists that are comfortable in the backcountry. They're typically self-sufficient, carrying tools, water, food, clothing and sometimes a first-aid kit. Avid riders seek trails that let them cover from 10-100 miles in search of solitude, nature and challenge. Desirable trails feature several miles of connecting loops with natural obstacles.

Technical / Trails Riders: Like challenges such as drop-offs, ledges, logs, elevated bridges, sharp exposure, dirt jumps, and seesaws. Some riders want technical features incorporated into their cross-country rides. Others prefer stand-alone experiences such as in a skate park. On backcountry trails, technical features should blend with nature, flow with the trail and be well built.

Other Considerations

Endurance Athletes: Some trail runners, mountain bikers, and equestrians like to push their limits. These people seek trail networks that are as much as a hundred miles long. A large network is more appealing than multiple laps of a short loop.

Disabled Trail Users: With improved skill, endurance and equipment such as off-road wheelchairs, more trail opportunities are being sought. Suitable trails have a wide, smooth tread with gentle grades. Proper signage about trail conditions and obstacles will allow users to customize a trip to their ability. In addition, many disabled users adopt common modes of trail transportation such as mountain bikes, horses, or ATVs. It is important to note that even if trails are not designed "accessible", trailhead features such as restrooms should comply with ADA standards.

Motorized Users: Operate ATVs, motorcycles, or trucks that travel off-road. Their needs are as diverse as any non-motorized user. One distinctive difference is that some prefer traveling cross-country with no apparent designation. It is the joy of using the machine for a challenge rather than as a mechanism to reach a destination. Because this activity is becoming highly regulated, many users are traveling in groups who enjoy slow trail riding to enjoy scenery and solitude. These activities have specific trail design specifications to meet their desired experiences.

Motorcycles: Are similar to a bicycle in that they prefer single-track trails. They can often travel long distances and prefer trails that offer a challenge. Trails should be curvy and have obstacles and most operators are skilled athletes.

ATVs: Require a 4-5 foot wide trail that is open and flowing. Trail riders enjoy beautiful scenery and stops with educational opportunities. The vehicles do not travel as fast as a motorcycle but they can pack in supplies into the backcountry. Many enjoy multi-day trips.

APPENDIX II

Trail Construction Standards

Recommended Resources

Introduction to Basic Trail Maintenance, California State Parks Training Guide.

Frank Padillia Jr. and Kurt Lohiet, 1999

Trail Management: Plans, Projects, People. BLM NTC course module 8300-17

Trail Solutions: IMBA's Guide to Building Sweet Singletrack. International Mountain Bicycling Association, 2004

Glossary of Terms

Standards – Features

1. Partial Bench Cut: Refers to an excavated cross slope. Used on hill sides with a gradual cross slope to help.
2. Full Bench Cut: Refers to excavating a very steep cross slope. Never toss excess material down slope. Haul out or disperse on the tread.
3. Side Slope Gradient: Cross slope.
4. Climbing Turns: used for bike and horses with a control point for moderate grade changes.
5. Switch backs: used for steep grade changes only when terrain or land boundaries dictate. Preferred for hikers. Never stack switchbacks one on top of the other.
6. Tread: The actual size of the dirt foot print.
7. Outslope: refers to the down slope part of the tread that helps to shed water from the trail.
8. Trail Corridor: the space around a person so that they can move comfortably along the trail without impediments. Minimum clear width:
 - i. Bikes: 4' wide, 8' high
 - ii. Horses: 6' wide, 12' high
 - iii. Hikers: 2' wide, 7' high
9. Control Device
 - i. Rock Lining: Rocks should NEVER be used to line a trail to control use or define the trail. Rocks which are placed on the down slope of a trail can inhibit proper trail drainage and lead to trail tread erosion.

- ii. Obstacles: Obstacles may be placed in the tread or along side to control speeds and increase technical challenge.

Drainage

1. Rolling Grade Dips: should be used in all erosion control situations.
2. Water Bars: This erosion control device should NEVER be used as a drainage device on SCRR trails. They are unsustainable in a desert environment.
3. Check Dams: Should NEVER be used on trails. Can be used to rehabilitate fall line trails with steep grades.

Layout and Design

1. Reconnaissance: understanding the full landscape before the flagging process occurs.
2. Flag Line: The proposed trail route.
3. Control Point: minor feature in the landscape of interest to bring the trail to or around.
4. Node: Major connecting point in a trail system. Usually a major intersection of point of interest.
5. Contour: The landscape line that a trail should follow.

All trail workers should have a minimum course in general trail construction and maintenance. Trail should be laid out by a landscape architect or other design professional to assure sustainability of each route.

“The best trail systems strike a balance between protecting resources and providing recreation. A well-balanced contour trail system takes people into nature while safeguarding the environment. Techniques for design, construction, and maintenance constantly evolve, but the goal is always the same: Build trails that are sustainable and appealing.” IMBA

APPENDIX III

Seed and Plant List

The following plants and seeds are generally considered appropriate for use in restoration work or landscape planting in the Santa Clara River Reserve when planted in their appropriate habitat areas:

Shrubs

1. Mesquite - *Prosopis glandulosa*
2. Four Winged Saltbush - *Atriplex canescens*
3. Rubber Rabbitbrush - *Chrysothamnus nauseosus* var. *gnaphaloides*,
C. nauseosus var. *consimilis*
4. Indigo Bush - *Psoralea fremontii*
5. Creosote Bush - *Larrea tridentata*
6. Burrobush (cheesebush) - *Hymenoclea salsola*
7. Sand Sage - *Artemisia filifolia*
8. Mormon Tea - *Ephedra nevadensis*, *E. viridis*
9. Winterfat - *Ceratoides lanata*
10. Bursage - *Ambrosia dumosa*
11. Blackbrush - *Coleogyne ramosissima*
12. Desert Willow
13. Quail Bush
14. Cliffrose - *Cowania mexicana*
15. Big sage - *Artemisia tridentata*
16. Fringed sage - *Artemisia fridgida*
17. Red yucca - *Hesperaloe parviflora*
18. Roundleaf buffaloberry - *Shepherdia rotundifolia*
19. Prickly pear cactus - *Opuntia* sp.

Grasses

1. Alkali Sacaton - *Sporobolus airoides*
2. Big Galleta - *Hilaria rigida*
3. Indian Ricegrass - *Stipa hymenoides*
4. Yellow Pepper-grass - *Lepidium flavum*

Forbs

1. Bottlestopper Buckwheat - *Erigonum inflatum*
2. Fragrant Sand Verbena - *Abronia fragrans*
3. Palmer's Penstemon - *Penstemon palmeri*
4. Stinking Milkvetch - *Astragalus praelongus* var. *praelongus*
5. Bush Encelia - *Encelia frutescens*
6. Broom Snakeweed - *Gutierrezia sarothrae*
7. Wooley Daisy - *Eriophyllum wallacei*
8. Desert Marigold - *Baileya multiradiata*

There is a variety of cactus, yucca, and wildflowers that are native but not on this list. They may be substituted.

APPENDIX IV
Acronyms and Definitions

Acronyms	Definitions
ACEC – Area of Critical Environmental Concern	Vehicle – refers to motorized vehicles including cars, trucks, ATVs, and motor-cycles.
ADA – Americans with Disabilities Act	
ATV – All-Terrain Vehicle	Non-Motorized User – refers to human powered wheeled devices, foot travel, or pack animal use.
BA – Badland	
BLM – Bureau of Land Management	
CMA – Cooperative Management Agreement	
DWR – Division of Wildlife Resources	
KOP – Key Observation Point	
LNT – Leave No Trace	
NPS – National Park Service	
OHV – Off-Highway Vehicle	
R&PP – Recreation and Public Purposes Act	
ROMP – Recreation and Open Space Management Plan	
RMP – Resource Management Plan	
SCRR – Santa Clara River Reserve	
SPR – Special Recreation Permit	
USGS – United States Geologic Survey	
VRM – Visual Resource Management	

APPENDIX V

Applications of Benefits Based Management

A paper prepared by Cimarron Chacon, Landscape Architect

Open Space Quality

Open space is an urban quality that is most often taken for granted in this county. When populations are low and access is prevalent, communities lack the vision to preserve lands from future development. As development begins to occur, progress and economic boon are the driving forces, not quality of life. Although urban open space is usually thought of as providing recreation, it serves many other purposes as well. Open space can provide beauty, privacy, and variety; moderate temperature; and create a sense of spaciousness and scale. – Council on Environmental Quality (CEQ, 1973)

The number one reason for relocating to Washington County is quality of life. Quality of life is intimately connected to open space. The ability to find the landscape, smell the desert, and recreate or exercise without the dangers and pollution of the urban fabric.

Because of this desire to achieve this leisure quality of life, property values are typically higher directly adjacent to permanent open space. Towns whose community members choose to set aside large tracks of open space have strong economies because of this land.

On the contrary, those communities that see their land based assets as development dollars soon experience blight and depressed economies as citizens leave these areas once they have experienced build out. This unplanned conglomerate of box buildings and fast food chains rob a community of their identity and hide the view sheds that drew people to relocate to the area in the first place.

The fact is that in today's marketplace, "green" sells. Environmental interest is high and it attracts paying visitors. In 2000 Washington County earned the 5th largest numbers in the State from recreation based tourism - \$233,200,000. Visitors come for the beauty of the landscape, the challenge of our trails, the leisure services provided by the communities, to learn about our histories, and to escape the city.

Carrying Capacity

The concept of carrying capacity as it relates to recreation setting is important to consider as part of the planning process. The concept originally advocated that it is possible to distinguish

minimum, maximum, and optimum capacity numbers for an area. This tendency to set limits or create a "magic number" focuses management and design decisions on quantitative attributes and negates the qualitative ones. However, there is a difference between density and crowding. This idea suggests that instead of allowing for "maximum capacity", a more complex balance of psychological attributes related to experience, expectations, and the physical environment should be met.

Social carrying capacity is not static. It can change over time as the user populations, their expectations, or their preferences change. The tolerance for crowding in relation to quality of experience varies among individuals but in general is much larger for those anticipating an urban experience than for persons seeking wilderness solitude. Conversely, it should be anticipated that as an area matures, gains an identity, and becomes accessible, that its densities will also increase. Planning, design, and management should therefore respond to these anticipated larger numbers and future desired conditions and not develop or promote an experience that will soon cause conflict management problems.

In addition, because people do have different experience preferences and many times design and management strategies can be different for different behaviors, planning should identify management zones that can respond to these anticipated expectations. The conceptual framework behind land-based zoning prompts planners to inventory every acre of land for opportunities based on five indicator criteria to the setting: remoteness, size of the area, evidence of humans or proximity to urbanization, anticipated user densities, and the amount and noticeability of managerial regimentation or control (Buist and Hoots 1982).

User Group Expectations

Historically, recreation has been defined as the human behavior of participation in a designated activity at a particular site or location. Examples are camping at a particular site and driving on a specific scenic highway. Thus, recreation was considered a human behavior in the same sense as spelling or sleeping. Little managerial attention was

directed to why such a behavior was chosen or how it positively and negatively impacted the recreationist. Recently, this orientation has changed. Known as “Benefits-Based-Management” (BBM), this idea focuses management on optimizing personal beneficial outcomes (Cordell 1999). For outdoor recreation, this broader array of beneficial outcomes includes:

- Nature-based spiritual renewal and wellness
- Psychological attachment to special places
- Appreciation of early American landscapes
- Use of heritage and historic resources not only for better understanding of the evolution of a culture or subculture, but also for maintenance of particular ethnic identities
- Strategically programming leisure services as a social intervention or change agent for a desired behavioral outcome
- Through tourism help stabilize the economy of a local community

To succeed at BBM a leisure policy planner must: 1) understand what benefits are associated with an activity that is provided; 2) decide what benefits opportunities will be provided; 3) articulate why particular benefits opportunities were chosen; and 4) understand how to plan, design, and manage a setting to deliver those opportunities (Cordell, 1999).

Conflict arises when members of one group perceive that the behavior of a second group interferes with their ability to achieve desired experience goals. Compatible uses may be categorized as passive or active. Mountain biking or hiking may be compatible with passive activities such as picnicking, but not with bird watching. Furthermore, there are two types of user categories within a specified activity: specialists (associate themselves with the sport, intense skill, custom equipment, choose an area for reputation or challenge) and generalists (first timers or beginning skill level, more often participating because of scenic value of place or social values). Preferences may differ and conflict may occur within any specific activity (i.e. hiking, mountain biking) because user group goals and experience expectations may be different. In addition, persons involved in high intensity activities desire fewer amenities and demand a greater degree of solitude. Conflict and management problems occur when these differences are not recognized. Separating or limiting uses is one way to reduce conflicts in a recreation area.

Zoning Trails – Preferred Use

The trend for trail management over the last 20 years for the Bureau of Land Management, the National Forest Service, and many municipalities has been “multiple-use.” This was true unless a user group was eliminated either by area designation, i.e. wilderness, or terrain. This was true, as well, because management practices focused on regions rather than trails, and on resources rather than human experience. On many public lands use numbers were low, trails were user created, and conflict encounters were rare. As use increased and trails were named and mapped, this process has created human conflict and increased resource damage. Trails advocates moved out and began creating even more trails as the goals and experience that the original trails were designed for were not supported by management practices. However, today these lands and resources are at the edge the urban interface for many gateway communities and the trend for trails management is shifting from a “Multiple-use” focus to one of “Preferred use.”

This idea considers the landscape terrain, soils, and other environmental conditions along with the desired experience of various users, makes an up front design decision about trail designation to balance use and conflict, and establishes goals and objectives by which these trails will be managed. The outcome of the process may create several “single use” trails rather than one multiple-use trail. It also aims at balancing novice trails with expert trails to achieve a higher level of user satisfaction and to avoid the “sanitation” of trails to accommodate increased use.

route to reach a recreation trail. With a stacked loop system, the first 4-5 miles might be easy terrain and wide enough for passing or double wide travel. This may lead to a second loop that is longer, narrower and offers additional challenge. One spur off this trail may be just for equestrians, and lead to a particular water hole or scenic overlook; another spur might be just for mountain bikers and have technical terrain over rock obstacles; and a third spur may lead down into a steep canyon and be only for hikers and climbers. Then each of these groups would join back up for a joint return trip during the last two miles of the journey. The Inter-connection system is similar, but aims to get all groups out to a single point or overlook via an out-and-back trail. The spurs and loops take off from various points on the stem and return to the stem. Both systems would allow for users to customize their outing to accommodate personal desired experience outcome and skill level.

ZONE BENEFITS

ZONE BENEFITS	Community	Personal	Household	Economic	Environmental
Zone 1 807 Acres <i>Urban Recreation</i>	1. Enjoying a walkable community 2. Feeling like the community is a special place 3. Celebrating cultural heritage and educating others about the past 4. Preserving traditional landscape views 5. Linking change and growth	1. Enjoying getting needed physical exercise 2. Improved skills for outdoor enjoyment with others	1. Reduced trips by automobile 2. Safer neighborhood environment 3. Larger zone for youth to explore 4. Relaxing with family and friends	1. Increased property values 2. Increased tourism 3. Increased tax revenues 4. Maintenance of community 5. Distinctive recreation-tourism niche 6. Increased desire to live or retire	1. Improved maintenance of physical facilities 2. Greater retention of community distinction 3. Reduced human impacts of unplanned trails, trampling, and litter 4. Greater protection of fish, wildlife, and water quality
Zone 2 1843 Acres <i>Rural Motorized</i>	1. Feeling good about how visitors are being managed	1. Enlarge sense of personal accountability for acting responsibly on public lands	1. Greater family bonding	1. Support of local retail	1. Reduced human impacts of unplanned trails, trampling, and litter
Zone 3 670 Acres <i>Urban Protection</i>	1. Celebrating cultural heritage and educating others about the past 2. Preserving traditional landscape views 3. Feeling good about how visitors are being managed 4. Feeling good about how natural resources are being protected	1. An improved stewardship ethic towards adjoining lands 2. Improved understanding of community dependence and impact on public lands 3. Enjoying access to hands on learning 4. Contemplating man's relationship with the land	1. Enjoy teaching others about the area 2. Heightened sense of satisfaction with our community 3. Greater household awareness of and appreciation for our cultural heritage and diversity 4. Less juvenile delinquency	1. Increased property values 2. Increased tourism 3. Increased tax revenues 4. Maintenance of community distinctive recreation-tourism niche	1. Greater retention of community distinction 2. Reduced looting & vandalism of historic/prehistoric sites 3. Greater protection of area historic structures and archeological sites 4. Reduced human impacts of unplanned trails, trampling, and litter 5. Improved care for community aesthetics
Zone 4 4225 Acres <i>Backcountry Recreation</i>	1. Nurturing spiritual values and growth 2. Knowing this attraction is near the community	1. Shaping one's own spiritual values 2. Developing a great understanding of the outdoors 3. Contemplating man's relationship with the land	1. Enlarged sense of community dependency on public lands	1. Increased property values 2. Increased tourism 3. Support local retail/outfitters 4. Diversify economic base 5. Increased desire to live or retire	1. Maintenance of distinctive recreation setting character 2. Reduced human impacts of unplanned trails, trampling, and litter
Zone 5 1469 Acres <i>Backcountry Protection</i>	1. Feeling good about how visitors are being managed 2. Feeling good about how natural resources are being protected	1. Testing endurance 2. Gaining self confidence 3. Getting away from town 4. Savoring the sights and sounds of the land 5. Exploring alone	1. Adopting environmental ethics as family values 2. Exploring the wonderment of nature together.	1. Increased tourism 2. Support local retail/outfitters 3. Diversify economic base	1. Conservation of sustainable ecosystem 2. Reduced human impacts of unplanned trails, trampling, and litter